

JAMAICA.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

THE YEAR ENDED 31ST DECEMBER, 1926.

Ordered by His Excellency the Governor to be Printed.



JAMAICA
GOVERNMENT PRINTING OFFICE, KINGSTON.
1927.

DEPARTMENT OF SCIENCE AND AGRICULTURE.

REPORT FOR THE YEAR ENDED 31ST DECEMBER, 1926.

Department of Science and Agriculture,
Hope, Kingston, 27th April, 1927.

Sir,

I have the honour to submit for the information of His Excellency the Governor, the Report of the Department of Science and Agriculture for the year 1926.

I.—GENERAL OBSERVATIONS.

The year has, on the whole, been favourable for agricultural production. For the first six months drought conditions were acute in many parts of the Island but the latter half of the year was favoured by well-distributed rainfall conducive to high productivity of all staple crops. The record of production for bananas, 18,301,410 stems exported, was achieved, while the prospects for 1927 indicated that a record of 20 million stems of bananas may reasonably be expected if favourable conditions prevail. The coffee, crop was depressed by unfavourable seasons to about two-thirds of that in 1925, the prices were, however satisfactory and there is a general feeling of encouragement as to the prospects of coffee which is leading to an extension of this staple.

The Jamaica Agricultural Society has been actively engaged in organising a development of this industry among the small growers. The Department assisted this effort by the free grant of 90,000 coffee plants to the members of local branches of the Agricultural Society.

The new Produce Protection Law has also promoted the efficiency of the coffee industry by causing numbers of small growers to pulp their coffee instead of drying it in the cherry as heretofore. The Department is now arranging to continue the distribution of coffee plants through the Agricultural Society for at least 2 years more.

Cacao increased from 2,600 tons to 3,000 tons while the price showed some improvement. The new Produce Protection Law should serve effectively to secure a better standard of ordinary Jamaica cacao which is in good demand by the trade and only lacks greater uniformity in quality to command a better price than at present in the world's markets for cacao. Coconuts showed a reduction from 26 to 23 million nuts exported but, on the other hand, Copra increased to nearly 10 million pounds weight showing a gain of $6\frac{1}{2}$ million pounds for the year. The health of the coconut groves continues to be good and there have been very few cases of bud-rot during the year. The conditions for production of sugar were favourable resulting in an export crop of 48,000 tons as compared with 37,700 tons in 1925.

Rum was in poor demand and it has become evident that the production of "Common, clean" Jamaica rum must be reduced until stocks have been considerably lowered. The very high duty on spirits in the United Kingdom exercises a check on the consumption of rum and efforts are now being made in the interests of the West Indian sugar planters to seek some amelioration of these conditions in the "home trade" market for rum. The estates have recently developed a keener interest in the testing of new canes and in the use of artificial manures. Definite results have already been obtained to show that "Uba" and "BH (10) 12" are two outstanding canes that will serve to increase the production of sugar in Jamaica. A large number of new canes have been obtained for trial at the Hope Experiment Station and the best of these are being issued to the estates. The condition as to Mosaic Disease on the estates may be regarded as satisfactory.

The small growers of cane appear to be disinclined to take the necessary measures for stamping out Mosaic Disease and it is apparent that the substitution of "Uba" or some resistant variety of cane for that at present being grown is necessary if Mosaic Disease is to be controlled on the small holdings.

The Department issued 161,000 cane plants during the year, chiefly from the Experiment Station at Hope. Several estates have now organised their own nurseries of Sugar Cane varieties.

The importation of Sugar Cane has been carefully controlled with a view to avoiding the introduction of new and dangerous diseases from other cane-growing countries.

The fibre industry is steadily gaining ground and plantations of Sisal and Henequen are being extended. The local invention of a portable decorticator has greatly stimulated the prospects of growing Sisal on medium areas of land with a moderate outlay of capital. Pimento was a short crop and in consequence the price improved so as to bring nearly as much money as in 1925 when the crop was 50 per cent greater. The manufacture of Pimento Leaf Oil is now in operation at three centres and despite the low price now prevailing for Eugenol Oils there seems to be a margin of profit for the producers of Pimento Oil in Jamaica.

The boom in Annatto in 1925 collapsed and only about one-third as much was received from the crop of 1926. This is purely a small settler's crop but the recent demand for Annatto as a pure butter colouring appears to justify hopes that the demand will continue to be good.

The Ginger crop was good and despite lower prices brought in over £71,000. A useful work in promoting good culture of ginger has been effected through a system of prizes provided by a firm who are large consumers of Jamaica Ginger. The Citrus industry shows some improvement. Grapefruit increased from 5 million to 7½ million and oranges from 106,000 boxes to 125,000 boxes in round numbers. The crop of Orange Oil was only half that of the previous year due to the drought in the first half of the year which greatly reduced the crop of wild oranges. Pineapples are beginning to figure again in the list of exports and there is hope for a considerable extension of this industry when the improved steamship facilities with Canada are in operation.

Hides were in good demand and show an increase in both quantity and value over the records of the previous year. The trade in Logwood and its extract is still somewhat depressed. A notable feature is that more wood is being exported now and less extract being manufactured in the island.

The Honey crop fetched only about half as much as that of the previous year. The early drought affected the flow of honey and the bees had a poor harvest. The Tobacco trade fell off somewhat. Jamaica Cigars fell below the previous year's record. There is, however, some enquiry for leaf in the United Kingdom where Empire-grown tobacco now obtains a useful preference.

With regard to diseases of crops Panama Disease was the most serious. Every effort is being made to control the spread of this disease and the staff of Inspectors has now been raised to 18. The results have been encouraging and although the disease continues to spread it is being prevented from rapid extension due to the careful quarantine of every spot where the disease appears.

The Coconuts have been singularly free from disease and Bud-rot is now of relatively rare occurrence. Foot and Mouth Disease again recurred on the Westmoreland swamp area and was dealt with by slaughter and prolonged quarantine. No cases of Anthrax were recorded during the year. An outbreak of Foul Brood Disease among Bees around the city of Kingston was dealt with by inspection and the destruction of all diseased hives and no extension of the infection has been found.

II.—PUBLIC GARDENS.

Report of the Superintendent and Horticulturist.

1. HOPE GARDENS.

From a batch of seedlings raised in 1925 a very promising Bougainvillea was flowered. It is a lighter shade of rose colour than any other variety of Bougainvillea yet seen at Hope Gardens. The bracts are large and the growth very vigorous. The hybrid Bougainvillea—"Lady Wilson"—(B. Rosa Catalina x B. spectabilis var. lateritia) is proving to be a most floriferous variety. Its habit is to produce long growths during the growing period and by the end of the season the growth develops into hard wood and becomes deciduous for a short period before producing masses of flowers along the ripened wood.

A further lot of seedlings has been raised from hybridised seed.

The collection of budded roses obtained from Ulster for trial proved very unsatisfactory for the lowland conditions. After a few months' trial in the Rose Garden these plants were sent to Cinchona where better results are being obtained. Four thousand young rose plants were imported from America for sale to the public.

Some very fine hybrid Cattleyas were added to the Orchid collection together with a good number of *Cattleya Dowiana* which were obtained from Central America. From the number of plants now in the collection a continuous display of blooms in the Plant House is obtained.

It was decided to raise a large number of Grapefruit and Coffee plants for free distribution through the Jamaica Agricultural Society to members of their Branch Societies and without any extra financial

help the Nursery undertook to raise the required plants in addition to the usual routine work. The result being that there was a free distribution of 90,066 Coffee and 43,157 Grapefruit seedlings—a total of 133,223 plants— from the Nursery at Hope.

Mr. A. P. Hanson, Agricultural Instructor for St. Andrew, again carried through his campaign for the re-afforestation of the Port Royal Mountains and distributed 24,065 economic plants to settlers in that vicinity.

PLANTS DISTRIBUTED FROM HOPE GARDENS, 1926.

<i>Sold.</i>			
Economic Plants—			
Coffee	..	..	6 162
Cacao	..	..	166
Citrus	..	..	4,287
Nutmeg	..	..	580
Eucalyptus	..	..	293
Misc. Fruit and Economic Plants	..	..	1,923
			13 311
Ornamental Plants	..	..	26,196
			39 507

Free Grants.

Economic Plants—			
Coffee	..	..	90 066
Cacao	..	..	157
Citrus	..	..	47,320
Nutmeg	..	..	31
Eucalyptus	..	..	15
Cane Tops and Cuttings	..	..	156,194
Elephant Grass Cuttings	..	..	67,989
Misc. Fruit and Economic Plants	..	..	6,670
			368,442
Ornamental Plants	..	..	3,771
			372,213
Total number of Economic Plants	..	..	381,753
Total number of Ornamental Plants	..	..	29,967
Total number of Plants Distributed	..	..	411,720

The following statement shows the distribution of plants for the last three years from the Nursery at Hope:—

	1926.	1925.	1924.
Coffee	96,228	..	..
Cacao	223	508	193
Citrus	51,607	3,889	3,496
Nutmeg	611	276	431
Eucalyptus	308	158	183
Cane Tops and Cuttings	156,194	199,102	421,385
Elephant Grass Cuttings	67,989	127,950	..
Misc. Fruit and Economic Plants	..	..	..
including Timber Trees	8,593	9,646	9,939
Ornamental Plants	29,967	29,897	30,071
	411,720	371,426	465,698

2. CASTLETON GARDENS.

Castleton Gardens are a centre of great attraction both to the tourist and to the general public who frequently make these Gardens their destination for picnic parties. Excellent accommodation has been provided by the Jamaica Tourist Association in the way of Tea Houses, Dressing Rooms for bathing parties and public conveniences, all of which add to the visitor's comfort in this somewhat isolated part of the Island.

During the year many rare and beautiful flowering trees and shrubs were seen in bloom. The Mangosteen trees bore a fairly good crop of fruits and a good number of seedlings were obtained for planting around the surrounding lands.

The nursery provided a large assortment of ornamental and economic plants for sale to the public

PLANTS DISTRIBUTED FROM CASTLETON GARDENS.

<i>Sold.</i>			
Economic Plants	..	..	367
Ornamental Plants	..	..	918
			1,285
<i>Transferred to Hope.</i>			
Economic Plants	..	..	1,434
Ornamental Plants	..	..	11,822
			13,256
Total Number of Economic Plants	..		1,801
Total Number of Ornamental Plants	..		12,740
Total Number of Plants distributed	..		14,541

3. PUBLIC GARDENS, KINGSTON.

The lawns around the Water Lily Tank in the centre of the Gardens were remodelled. The pathways cutting through the lawns were closed in with earth and planted with Bahama Grass. New beds have been opened up in the lawns and planted with new varieties of Cannas.

A large number of the new varieties of Cannas growing at Hope Gardens were removed to the Kingston Gardens where they are found to do exceptionally well and are quite free of fungus and the small grub which damages the flowers before they fully develop in the Hope district.

A plant of the *Victoria regia* was planted in the Lily Tank. It has made very good growth and is often seen in bloom.

The general routine work of mowing lawns, weeding and manuring borders, watering, and cleaning pathways was regularly attended to.

The Memorial Square received constant attention for mowing and watering of the lawns.

The lawns by the Public Buildings were neatly maintained.

At the end of the financial year 1925-26 the Kingston and St. Andrew Corporation took over the care of the Street Trees from the Department of Agriculture.

4. HILL GARDENS, CINCHONA.

The collection of new varieties of Rose plants imported from Ulster for trial at Hope Gardens, the majority of which did not do well in the lowlands, was removed to Cinchona where more satisfactory results are now being obtained with most of the varieties.

Plants and seeds, new to Jamaica, were received from Botanical Institutions abroad and established in the Gardens.

Dr. Duncan S. Johnson, Professor of Botany at the John Hopkins University, U.S.A., conducted a party of Students to Jamaica and during a part of their stay in the Island they were in residence at Cinchona.

A large quantity of Peat was obtained from the Government lands around Cinchona and sent down to Hope Gardens for orchid potting. Having this material at our command enables the Department to maintain the large collection of orchids at Hope Gardens at a minimum cost.

The routine work in the Garden was regularly attended to throughout the year.

5. KING'S HOUSE GARDENS.

During the year under review alterations were made in the Rose Garden. The number of beds was considerably reduced and converted into lawn. In place of the informal design of beds four straight beds have been opened up and planted with annuals and roses.

A plant of the *Victoria regia* was planted in the Water Lily Tank together with other day and night blooming Water Lilies.

Twelve plants of *Artocarpus integrifolia* (Jackfruit) were planted along the boundary of the Kitchen Garden. Several varieties of Grape Vines were planted along the Bougainvillea pergola. A hedge of *Acalypha Wilkesiana* was established in front of the Private Secretary's Bungalow.

The routine work of maintaining the Gardens in a tidy condition was regularly attended to.

6. GORDON TOWN GARDEN.

The enclosed Garden situated in the centre of Gordon Town was kept in a tidy condition by a gardener sent from Hope at regular intervals.

7. BATH GARDEN AND NURSERY (ST. THOMAS).

Mr. R. Glen Campbell, Inspector of Plant Diseases, who took over charge of this Garden in August, reports as follows:—

The routine work of cleaning, pruning, and replanting of flowering shrubs was regularly attended to and some additional pathways which were necessary have been made.

Half-a-dozen Tree Ferns were planted out in the Gardens. The Coffee nursery was extended and a number of Citrus seedlings were set out preparatory to budding in the Spring. 4,826 cane plants were distributed from the nursery.

8. Summary of Plants Distributed by the Department during the last three years.

	1926.	1925.	1924.
Coffee	96,228	..	..
Cacao	223	1,308	223
Citrus	51,607	3,889	3,496
Nutmeg	611	616	1,431
Eucalyptus	308	158	183
Cane Tops and Cuttings ..	161,020	438,102	937,489
Elephant Grass Cuttings ..	67,989	127,950	..
Misc. Fruit and Economic plants including Timber Trees ..	8,960	9,884	10,010
Ornamental Plants	30,885	31,365	31,183
	417,831	613,272	984,015

9. The Garden and Plantation Sales for the past three years have been as follows:—

		£	s.	d.
1926		698	6	11
1925		722	13	2
1924		677	2	3

10. The Rainfall at the various Gardens for the year under review is as follows:—

1926.	Hope. Gardens.	Hill Gardens.	Parade Gardens. Kingston.	Castleton Gardens.	King's House Gds.
	Ins.	Ins.	Ins.	Ins.	Ins.
January ..	0.80	1.94	0.35	2.14	0.60
February ..	0.70	8.19	0.88	16.59	0.00
March ..	0.99	2.64	0.00	2.09	2.00
April ..	1.88	0.93	0.00	9.76	1.03
May ..	4.10	4.33	1.10	8.94	0.99
June ..	2.27	2.72	0.43	9.45	1.07
July ..	1.78	2.31	1.19	6.62	1.40
August ..	9.44	9.88	6.69	6.27	7.16
September ..	6.56	9.76	3.24	11.05	5.95
October ..	9.66	11.45	2.63	15.42	7.90
November ..	5.16	10.02	0.94	17.38	0.80
December ..	2.50	12.40	0.00	12.92	2.28
	45.84	76.57	17.45	118.63	31.18

11. Contributions to the Gardens have been received from the following:—

Foreign.

U. S. Department of Agriculture.
 Royal Botanic Gardens, Edinburgh.
 Missouri Botanic Gardens, St. Louis, Mo.
 Messrs. Vilmorin-Andrieux and Co., Paris.
 Dr. Holger Johansen, Canal Zone.
 Conservator of Forests, Belize, British Honduras.
 H. Nehrling, Tropical Gardens and Arboretum, Naples, Florida.
 Department of Agriculture, Mexico.
 Porto Rico Agricultural Experiment Station.
 Department of Agriculture, Trinidad.

Local.

Mrs. F. Richmond, Engadine, Ruthven Road, Halfway Tree.
 Lady Swettenham, Belle Vue, Gordon Town.
 P. G. Duff, Roseneath, Half-way Tree.
 Bertram Dixon, Amity Hall, Golden Grove.
 A. Pullar, Custom House, Kingston.
 Jamaica Agricultural Society, Kingston.
 Mrs. M. Malcolm, Knockalva, Ramble.
 L. L. Carrington, 11 North Parade, Kingston.
 A. C. Williams, 73 Windward Road, Kingston.
 B. L. Hodelin, 126 Duke Street, Kingston.
 W. Cradwick, Mandeville.
 T. H. Sharp, Eltham Park, Spanish Town.
 Dr. M. Grabham, Kingston.

E. DOWNES,
 Acting Superintendent and Horticulturist.

December, 1926.

III.—AGRICULTURAL EXPERIMENTS.

Report of the Superintendent of Agriculture.

Mosaic Disease.—The position reached at the end of 1925 remains satisfactory in that Mosaic Disease does not seriously affect the output of sugar on the estates of the Island.

In some cases distinct improvement is shown, and the disease reduced to the point of extinction. This, however, has only been accomplished by determined, constant and energetic effort on the part of the management.

Kew Estate in Hanover is one of the most remarkable illustrations of what can be accomplished on the control of Mosaic Disease. This estate at the beginning of 1925 had fully 20% of the canes infected with disease. At the end of 1926 there was present less than 1% of disease, and that was being rapidly reduced. This meant a sacrifice of over 200,000 roots of cane, but in spite of this an increase of over 50% in tonnage is expected for the 1926 crop.

Mosaic Disease in the Field of the Small Settler.—This still remains a serious problem, and one that will necessitate the appointment of Field Inspectors, and the application of the Law, if any reduction of this disease in the fields of the small settlers is to be achieved. Preaching, demonstration, entreaty and lecturing are all without appreciable effect in the majority of cases and the position remains serious. In some districts the fields have been completely wiped out, as is the case in the Cornwall Mountain District of Westmoreland. The proportion of disease in the various parishes may roughly be summarised as follows:—

	Dec. 1925.	Dec. 1926.
St. Catherine	.. Less than 5%	.. Less than 4%
Vere	.. Less than 1%	.. Less than 1/10 of 1% except in 3 bad spots to be dealt with when reaped.
Mid Clarendon	.. Serious; some cases over 20%—particularly so among small settlers	.. Less than 15% improving especially so in large fields.
Upper Clarendon	.. Serious among small settlers (Trout Hall to Frankfield)	.. Still serious where present.
St. Elizabeth	.. Serious in all sections and on estate.	.. Great improvement especially so on Holland Estate.
Westmoreland	.. Improved on last year, but still serious in ratoons and among small settlers.	.. Steady reduction due to replanting and better roguing. Still serious among small settlers and on some estates.
St. James	.. Less than 1% except in one area and among settlers.	.. Remains the same.
Trelawny	.. Improved, but bad in one centre and among Settlers	.. Remains the same. The estates are practically free.
St. Ann	.. Less than 1%	.. Less than 1/10 of 1%
St. Thomas	.. Less than 1%	.. Less than 1/10 of 1%
Hanover	.. Less than 5%. Some cases in excess of this.	.. Serious among small settlers. The fields of the estates show considerably less than last year.

Varietal Canes.—The year has been marked by a great wave of revived interest on the estates in the matter of Varietal Cane selection, and there is every reason to hope that in Jamaica we will find, as has been found in other countries, a better cane (giving more sugar per acre) than the White Transparent which has been pre-eminent hitherto. It must be remembered, however, that there are other factors controlling the output of sugar per acre beside varieties of cane. The question of manure-humus, drainage, and cultivation loom largely in the matter—and must be faced in the near future, as these questions have never hitherto been faced.

The following selection of varieties have been distributed to the estates named below, but unfortunately in the interests of this report I am unable to give any complete data upon these canes, as in every instance the planters have elected to cut them before maturity in order to extend their planting.

Estates.—Blue Castle, Friendship, Springfield, Kew, Llandovery, Richmond, Frome, Bog, Jamaica Sugar Estates, St. Thomas, Worthy Park.

BH. 10 (12)	Ba. 6032	Badilla	Mexican Striped
B. 1529	J. 72	B. 119	B. 7169
Ba. 12079	Ba. 8409	B. 178	B. 268
Ba. 11569	Ba. 7924	B.S.F. 12 (48)	Ba. 11403
B.S.F. 12 (50)	B. 295	B. 255	B. 67

Very promising results and reports have been had of the BH 10 (12), a cane which has in the majority of cases abroad proved supreme. Extensive plantings have taken place during the year. Caymanas and Innswood Estates in St. Catherine have had excellent results from this variety.

At Innswood, a field of 15 acres of BH 10 (12) gives an average tonnage of 43 tons per acre, while the White Transparent of the same age gave 29 tons per acre on the same run of land. The juice of the BH 10 (12) was also 20% sweeter, making a total gain of nearly 70% in favour of the BH 10 (12).

At Springfield in Vere BH 10 (12) and White Transparent were grown adjoining one another in the same field. The BH 10 (12) yielded 39.6 tons per acre, Juice 20.5 Brix while the White Transparent gave 30.5 tons Juice 17.6 Brix. A total gain of nearly 40% in favour of the BH 10 (12).

At Worthy Park a series of tests were made on 8 varieties of canes. The B 178, B 255, Ba 12079, B.S.F. 12 (48) B 261, Ba 11403 and B.S.F. 12 (50). B.S.F. 12 (50). gave an increase of 14 tons of cane per acre over that yielded by the White Transparent, and B 255 an increase of 10 tons per acre. See Table I.

Uba Cane.—The Uba Cane continues to be a prime favourite with the planters in spite of very pessimistic forebodings. The cane has fully justified its introduction by the Department and has been the major factor in the solution of the Mosaic Disease on many estates. It has also distinctly increased the crops of some places as it has been found to do admirably on certain lands hitherto unsuited to other less hardy varieties of canes.

At Friendship Estate in Westmoreland 3 fields of Plant Uba Canes averaged 44 tons per acre. One yielding 60 tons per acre, while a comparative average for White Transparent, under similar conditions was 28 tons.

In ratoons Uba yielded 28 tons while White Transparent Ratoons yielded 22 tons per acre.

Tests were made at Friendship Estate to determine the comparative loss of sugar between the Uba cane and the Transparent at different periods of time after cutting. It was found that the Uba Cane cut, and left over for the week end lost 11% of its Sucrose; the Estate Cane losing 6.0, and that it is advisable, therefore, to grind Uba Cane within 24 hours of cutting. See Table II.

In Vere it is now thought that the Uba Cane as a ratoon is unsuitable to their conditions on account of the late cutting, and early arrowing habit of this cane— which considerably reduces its yield. Manual Experiments were laid out on the following places:—Catherine Hall Estate (2 sets), Llandovery, Richmond, Friendship, Blue Castle, Frome, Water Works, Springfield, Jamaica Sugar Estates (2 sets). Of these 4 fields came to maturity and were reaped, 2 at Catherine Hall, one at Springfield, and the other at Llandovery. The two sets at Catherine Hall were abortive, due to irregular fields, and no reliable deductions can be drawn therefrom. The experiment at Springfield showed clearly the value of lime as a dressing, giving an increase of 5.4 tons of cane per acre, and a profit of 62/. In this case lime was more valuable than any of the high grade fertilizers and should receive prior consideration by the management. See Table III.

At Llandovery the result of this experiment clearly shows that phosphates are not necessary, and that lime is a first essential, giving an increase of 5.4 tons of cane per acre, and a profit of 60/. Nitrogen and Potash appear to be equally essential in proportion of 2:1. See Table IV.

Produce Protection Law of 1926. During the months of August and September I was seconded for duty for work connected with the new Produce Law, and submitted a report on the Cocoa, Coffee and Citrus Industries, after making a survey of the Island for this purpose. I have since that time, to the end of the year, carried on propaganda work in connection with this Law throughout the Island.

I have the honour to be,

Sir,

Your obedient Servant,

P. W. MURRAY,

Supt. of Agriculture.

TABLE I.—ESTATE WORTHY PARK.

Cane.	Ton per Acre.	Sp. Gr. 30°	Sucrose %	Glucose %	Glucose Ratio.	Purity.
		16.6° C.				
Bourbon (White Cane)	33.15	1.0689	16.15	0.85	5.26	85.35
B.178	25.75	1.0618	13.95	1.00	7.16	81.62
B. 255	40.25	1.0636	14.32	1.01	7.05	81.59
B.261	35.00	1.0662	14.87	0.68	4.57	81.56
Ba. 11403	28.25	1.0671	15.10	0.67	4.43	81.79
Ba.12079	31.50	1.0627	14.19	1.05	7.39	81.92
B.S.F. 12 (48)	26.25	1.0601	13.83	0.79	5.71	83.11
B.S.F. 12 (50)	46.50	1.0654	14.64	1.19	8.12	81.28

TABLE II.—A TEST TO DETERMINE THE COMPARATIVE LOSS IN SUGAR BETWEEN THE ESTATE CANES
AND UBA CANE AT DIFFERENT TIMES AFTER CUTTING

Estate Friendship.

Cane.		Sp. Gr. 30 °	Su- crose %	Glu- cose %	Glu- cose Ratio	Purity.	Percentage of loss in Purity.	Actual loss in degrees Purity.
		16.6' C.						
Estate Cane Plants	} at cutting	1.0680	15.19	1.71	11.25	81.27		
Uba Cane Plants		1.0804	18.53	0.68	3.66	84.49		
Estate Cane Ratoons		1.0680	15.33	1.61	10.50	82.02		
Uba Ratoons		1.0782	17.36	1.39	8.00	81.31		
Estate Cane Plants	} 24 hours	1.0689	15.56	1.66	10.66	82.24		
Uba Cane Plants		1.0817	17.69	1.58	8.93	79.39	6.03	5.10
Estate Cane Ratoons		1.0743	16.65	1.39	8.34	82.01	..	..
Uba Cane Ratoons		1.0756	16.53	1.28	7.74	80.04	1.60	1.27
Estate Cane Plants	} 48 hours	1.0671	13.98	2.45	17.52	75.73	6.90	5.54
Uba Cane Plants		1.0769	16.17	1.79	11.06	77.00	8.03	6.79
Estate Cane Ratoons		1.0703	15.25	2.28	14.95	79.13	3.50	2.89
Uba Cane Ratoons		1.0804	16.41	2.68	16.33	74.82	7.98	6.49
Estate Cane Plants	} 72 hours	1.0676	13.73	3.14	21.86	73.93	9.06	7.34
Uba Cane Plants		1.0782	16.59	1.96	11.81	77.70	8.03	6.79
Estate Cane Ratoons		1.0707	14.86	2.22	14.93	76.67	6.40	5.35
Uba Cane Ratoons		1.0787	15.52	2.92	18.81	72.28	11.0	9.03

TABLE III.—MANURIAL EXPERIMENT.

Springfield Estate—Clarendon.

Field Harvy Ville—Plant Canes.

Plot Description.	Sulphate of Ammonia.	Nitrate of Soda.	Muriate of Potash.	Per Acre.		Increase.	Profit or Loss.
				Cost.	Tons Cane		
1. No manure ..	..	..	..	..	34.6	..	..
2. S. Ammonia ..	2 cwt.	..	..	33/6	37.9	3.3	16/
3. Nitrate of Soda ..	..	2 cwt.	..	34/	36.0	..	..
4. No manure ..	..	..	..	..	37.8	..	..
5. Ammonia & Soda ..	1 cwt.	1 cwt.	..	33/9	32.8	..	..
6. Double Ammonia ..	4 cwt.	..	..	67/	35.4	1.9	..
7. No manure ..	..	..	..	..	33.5	..	..
8. Double Soda ..	..	4 cwt.	..	68/	30.0	..	..
9. Ammonia & Potash ..	1½ cwt.	..	1 cwt.	39/	36.0	.4	..
10. No manure ..	..	..	..	..	35.6	..	..
11. Soda & Potash ..	..	1½ cwt.	1 cwt.	39/6	36.5	9	..
12. Potash ..	..	..	2 cwt.	28/	36.0	..	..
13. No manure ..	..	..	..	..	44.0	..	..
14. Lime ..	½ ton	..	..	10/	36.2	..	..
15. Lime ..	1 ton	..	..	20/	35.1	5.4	62/
16. No manure ..	..	..	..	..	29.7	..	..

TABLE IV.—MANURIAL EXPERIMENT.

*Llandovery Estate.**Field Lower Laughlands—Plant Canes.*

Plot Description.	Amm. Sulph.	Nitrate of Soda.	Phosph.	Lime.	Potash.	Per Acre.		Increase.	Profit or Loss.
						Cost.	Tons Cane.		
1. No manure ..	..	..	..	..	..	..	19.0	..	..
2. Complete ..	98	134	175	..	70	56/2	22.0	3 tons	..
3. Nitrogen ..	98	134	..	..	..	36/5	26.5	2½ tons	..
4. No manure ..	..	..	..	..	..	..	24.0	..	..
5. Amm. & Potash ..	98	..	..	..	70	20/6	26.0	2 tons	plus 9/6
6. Nitrate & Pot.	..	134	..	..	70	28/5	25.0	3 tons	plus 16/7
7. No manure ..	..	..	..	..	..	..	22.0	..	..
8. Amm. Pot. & Phosph. ..	98	..	175	..	70	33/9	24.0	2 tons	..
9. Nitrate Pot. & Phosph. ..	..	134	175	..	70	41/11	22.0	..	..
10. No manure ..	..	..	..	..	..	..	22.5	..	..
11. Nitrate & Phosph. ..	..	134	175	..	..	35/8	19.5	..	..
12. Amm. & Phosph. ..	98	..	175	..	..	27/9	19.5	..	..
13. No manure ..	..	..	..	..	..	..	24.5	..	..
14. Arnotts (homemade) ..	45	..	150	..	14.5	19/7.	28.5	3½ tons	32/11
15. Arnotts (homemade) ..	45	..	150	..	14.5	19/7	28.5	7½ tons	..
16. No manure ..	..	..	..	..	..	..	18.0	..	..
17. Lime ..	..	..	..	1 ton	..	20/	27.0	3½ tons	32/6
18. No manure ..	..	..	..	..	..	..	23.5	..	..

Report of the Plant Breeder.

Canes.—The demand for cane tops this year has been confined chiefly to the better varieties of which there was only a limited quantity, and a total of 156,194 tops and cuttings were distributed.

The Uba cane for which there had been great demand from 1921 to 1925 has now become negligible owing to the fact that planters having realised the loss they suffered through the Mosaic Disease have been carrying out a campaign against it and through persistent and careful roguing of diseased plants throughout their fields, have now reduced the infection to such small percentages that they are now able to replant largely the better varieties of sugar cane. There are, however, at the present time, estates which are still going in largely for Uba. These are either estates in isolated districts where the conditions are so favourable for the development of Mosaic that it is impossible to replant the better varieties without great risk of infection, or estates where the rainfall is so small that the better varieties are almost an entire failure.

The B.H. 10 (12) continues to be the favourite seedling cane and this is being planted in large quantities all over the Island. A large tonnage has been obtained from this cane and it is known that on several estates where conditions are suitable to this variety from 40 to 50 tons per acre and over have been obtained.

There was a big demand for the Ba. 11569 this year but our supply was very limited owing to the fact that although this cane was recommended for dry districts during 1922, 1923 and 1924, it was never taken advantage of, and only a small plot was kept to meet the small demand. Now that the demand has increased its cultivation has been extended to enable us to meet as far as possible the demand during the next planting season.

There has been a demand for other varieties in small quantities for planting out in experimental plots in comparison with better known varieties such as White Transparent and B.H. 10 (12). I am glad to be able to state that there are a few planters who are very interested in seedling varieties and these have laid out some experimental varietal plots which do them great credit. We are always ready to send out new varieties to any one who is willing to carry out these varietal experiments and give advice and assistance when possible.

The varieties mentioned in last year's report as being planted out in quarantine at the Government Laboratory have been replanted in larger plots and some of them will be ready for distribution during the next planting season. Among these varieties are some P.O.J. seedlings which are not immune to Mosaic Disease but when infected they stand up well to the disease. These varieties are probably carriers of Mosaic Disease and we would advise planting these varieties only in districts where it is impossible to grow the better varieties of sugar cane owing to the ravages of Mosaic Disease and to take the place of the Uba.

A seedling was obtained last year by crossing B.H. 10 (12) and Uba. This has made very poor growth but it will be cut up and replanted in the hope that it will make better growth when replanted. An attempt has been made again this year at crossing B.H. 10 (12) and Uba.

The following varieties have been imported this year and have been planted out at the Government Laboratory under quarantine:—Fenix, C.36, D. 247, Kinar, P.O.J. 1228, D. 109, F.C. 299, F.C. 306, and Cayana No. 10.

Bananas.—All the plants set out last year have fruited. The usual methods of cultivation, pruning and irrigation were carried out and the entire field presents a healthy appearance.

The experiments of cross-pollination were carried out during the year, but success so far has only been obtained by crossing the Ramkelat and the Kewensis, a seeding variety. The use of Kewensis pollen on other varieties has been discontinued and the pollen of Robusta used instead.

Variety plots were planted out at Castleton Gardens and the work of cross-pollination carried out there also. There are now twelve seedlings growing.

Mangoes.—During the year budding of Bombay Mango trees was continued with success. A good crop was reaped and a record amount sold. Some of the trees suffered badly from the attack of thrips.

Cacao.—The usual attention was given to the Cacao plots but owing to the severe drought during the first half of the year some of the younger trees died. These were replaced during the month of October.

Coffee.—The seedlings planted out during last year to replace the old trees are doing well.

Citrus.—The Citrus Grove is being resuscitated and an effort made to obtain all the best grapefruit and orange varieties locally so as to have as complete as possible our collection of varieties. During the year several budded plants of Marsh Seedless and Foster Grapefruit and Navel Orange were planted out to replace trees which had died. The trees are being continually sprayed with Lime Sulphur Wash to keep in check the Citrus Black Fly. The majority of trees present a very healthy appearance and produced a good crop during the year.

Agricultural Education.—The Students of the Farm School continued to visit the Experiment Station for five days each week and received instruction in the cultivation of the crops mentioned above. They have done practical work in the fermenting and curing of Cacao and Coffee as well as ploughing, forking, pruning, irrigating and application of insecticides and fungicides. Most of the work on budding mangoes and cross-pollination of bananas has been done by the Students.

Mr. L. A. Powell, the master in charge of the students in practical agriculture, has taken a keen interest in this part of his work.

M. S. GOODMAN,
Plant Breeder.

IV.—CONTAGIOUS DISEASES OF ANIMALS.

Report of Government Veterinary Surgeon.

1. (a) During the first quarter of the year, 1926, while stationed at the Hope Stock Farm, I lectured to the Farm School Students six hours a week on veterinary subjects, made trips to the country parts in response to reports of occurrences of infectious diseases listed under the Law (Law 29 of 1922), supervised with the aid of Mr. H. C. Maxwell, stationed in Westmoreland, the last three months of the quarantine of nine months imposed in connection with the May-September recurrence of foot-and-mouth disease of 1925, and made a survey of tick control operations in St. Andrew, St. Thomas, Portland and the eastern parts of St. Catherine and St. Mary.

(b) The second quarter was spent in the United States of America on three months leave of absence during which time Dr. Vincent Tavares of Kingston acted as Government Veterinary Surgeon and also lectured in the Farm School. While in the United States I took the opportunity of a short course of study in the laboratories of the graduate school of the Veterinary Department of the University of Pennsylvania.

(c.) The third quarter was occupied in the suppression of the third recurrence of foot-and-mouth disease in the parish of Westmoreland. For the two weeks immediately prior to my return to the Island the foot-and-mouth disease operations were in the charge of Dr. Vincent Tavares who served for that period as Acting Chief Commissioner.

(d.) At the commencement of the fourth quarter of the year I returned to Hope Stock Farm when I resumed teaching in the Farm School, took charge after the resignation of Inspector of Apiaries, Mr. C. N. Eddowes, of the control of Foul Brood Disease of bees in association with the Government Entomologist, Mr. C. C. Gowdey, and the field assistance of Messrs. Arthur L. and Henry S. Holt as Apiary Inspectors. In addition I have supervised with the local aid of Mr. H. C. Maxwell the post-outbreak quarantine maintained in Westmoreland in connection with the 3rd recurrence—the June 17th, 1926 of foot-and-mouth in that parish.

2. FOOT AND MOUTH DISEASE.

Since the 1922-23 outbreak of this disease, which in its early days got quite out-of-hand and spread to various parts of the parishes of St. James, Hanover, Westmoreland and the western fringe of St. Elizabeth, there have been *three* recurrent outbreaks up to the close of this year. All three have had their origin on the swamp lands of the lower Cabaritta River in middle Westmoreland. The first appeared at Fontabelle Estate on December 3rd, 1923, the second at Belleisle Estate on May 29th, 1925 and the third at Midgham (Charlottenburg) Estate on June 17th, 1926.

The repeated occurrences of this infection of cattle on these swamp lands stand in marked contrast with the freedom from recurrent outbreaks in the rest of the large territory involved in the original 1922-23 invasion of the western parishes. The circumstances suggest the theory that infection-recovered animals may or do remain subsequent to an outbreak as potential "carriers" or virus reservoirs for a longer period of time after infection on swamp lands than on dry or well drained soil.

There is no good evidence that infection persists or is harboured in the soil of an infected locality, even if it be marshy or swampy. All leading authorities agree that putrefactive processes which naturally occur in soil and which are necessarily very active and general under swamp conditions quickly destroy the virus of foot and mouth disease. Accordingly it is highly probable that "carriers" of previous attacks of the disease are responsible for the recurrences experienced in Westmoreland.

The Midgham (Charlottenburg) Outbreak of June 17th, 1926.—The circumstances attending this outbreak were at first rather obscure. Midgham itself had not previously been an infected place.

Later events, however, indicate that the infection of its steer herd is connected with the introduction of a few cattle (at least, five head) which were exposed or involved in a limited outbreak among cattle on a portion of the swamp lands of the Cabaritta River known as Over-the-River, probably in the later part of May.

Immediately after the infection of the Midgham herd was established the estate and all the adjoining estates and holdings were rigidly quarantined and drastic action taken to prevent the extension of infection through the movement or straying of small stock in close proximity to the infected cattle at Midgham. Accordingly all swine and goats in a selected area around Midgham were immediately purchased and destroyed. Having thus provided a protective zone against spread of infection by direct contact exposure, a general survey of other herds in the district was undertaken to determine as far as possible the limits of the infection then centred at Midgham. As no other foci were discovered during the 15 days immediately succeeding the discovery of the disease at Midgham all the circumstances then indicated that the outbreak was very limited in extent. Accordingly slaughter appeared to be the best method of dealing with the situation. This was commenced on the 3rd July and completed at Midgham on the morning of the 6th.

Two days after the completion of slaughter at Midgham, infection was found at R. S. Daly's premises, Jenkins, on the outer portion of the village of Fullersfield. Investigation traced its source to the Midgham herd from which a bull had been removed just prior to the notification of infection at Midgham and his subsequent escape to Jenkins. This led to the prompt slaughter of the 13 cattle at Jenkins as well as the swine on the infected place and in all adjoining small-holders' premises.

On the 10th July a Hindu's cow and calf tethered on the outskirt lands of Midgham were found diseased and destroyed.

Subsequently (between July 16th and August 13th) inspections of the involved area revealed two cases of infection which from the appearance of the lesions antedated the Midgham outbreak. These animals were discovered to have been moved sometime in May from that portion of the swamp lands of the Cabaritta River known locally as Over-the-River. One of these cattle was taken directly to Midgham Estate where definite association with the steer herd took place occasionally at least. The other affected cow from Over-the-River was taken to her owner's home and subsequently infected two of four other cattle on the premises. Accordingly it appears more than probable that the recurrence of June last started among a few cattle on one portion of the Over-the-River lands and was transferred to Midgham and a small holding on Mt. Eagle "Buy Lands" by the movement of cattle infected at the time of their movement or which developed the disease very shortly thereafter.

Having thus traced what seems the primary infection of the outbreak to Over-the-River, it was necessary to investigate other possible transference of infection from that source. Consequently a searching survey was made of all traceable movements of animals from Over-the-River, but strange as it may seem no other cattle removed therefrom or with which such moved cattle were associated exhibited any indications of existing or past infection.

By early slaughter of all infected animals and their contacts on actually infected places as well as on premises immediately adjacent thereto, the outbreak was checked within 8 weeks after it was discovered. However, in view of the history of the disease on the plains of Westmoreland, its known tendency to recur and to safeguard the local and general live stock interests of the Island, quarantine restrictions on the western two-thirds of the parish have been and still are being maintained.

In carrying through the policy of slaughter under Order (The Foot and Mouth (Westmoreland) (Slaughter of Animals) (No. 2) Order, 1926—170 cattle (4 bulls and bulkins, 11 cows, 140 planters' steers, 2 fattening steers, 7 heifers and 6 calves), 171 small animals (100 swine, 18 goats, 5 dogs, 48 poultry) valued at £2,092 3s. 0d. were killed and buried.

In addition to the Westmoreland outbreak reports were received during the year of foot-and-mouth at Retreat Estate in Westmoreland on 22.1.26, at Belvidere Mountain in the mountains of Westmoreland on 23.6.26, at Grandvale in Westmoreland on 29.7.26, at Santa Cruz, St. Elizabeth, on 19.8.26 and at Petersfield, St. Thomas on 25.10.26. All these reports were thoroughly investigated with negative findings for foot-and-mouth disease.

The staff employed in the suppression of the foot-and-mouth outbreak consisted of: Dr. Vincent Tavares of Kingston, who acted as Chief Commissioner from June 17th to 30th when he was relieved by the writer the day after his return from leave in the United States of America; Mr. A. F. Thelwell

of the Farm School at Hope Stock Farm, who served from June 17th to July 31st; Mr. R. Stewart Grant from July 11th to August 23rd and Mr. H. C. Maxwell from June 20th and who was left in local charge of the quarantine from October 5th until the end of the year and the succeeding months of 1927.

I record with much pleasure the admirable service rendered by all and the cheerful manner in which under very trying conditions of weather they performed their duties and maintained throughout the early period of the outbreak that optimistic outlook, which is so essential to success in such perplexing work.

3. ANTHRAX.

During the year no actual outbreaks have come to the attention of the Department. On several occasions suspected occurrences have been reported, but all such on investigation proved to be mortality from other causes, such as acute tick fever or probable nightshade poisoning, etc.

In the districts of Pepper, Goshen and Santa Cruz, St. Elizabeth, several mane and horned stock were reported this year as in former years to have been lost from anthrax. These mysterious deaths which occur chiefly between August and November have as yet not been satisfactorily explained. Visits made for study have always been disappointing, for if any postmortem material is then available it has failed to indicate any of the features of an infectious disease or on other occasions no sick or dead animals could be found for examination. However, there are owners in these districts who are sufficiently satisfied that anthrax is the cause of their losses that they practise annual vaccination against that disease.

The properties in St. Catherine and St. Thomas which experienced outbreaks in 1925 took the precaution of vaccination this year and had no recurrence.

4. RED WATER DISEASE OF CATTLE OR HAEMATURIA.

A few recurrences of this trouble in Southern Manchester were reported during the year. No further study of this condition has been made due to my pre-occupation with the foot-and-mouth outbreak in Westmoreland.

5. BLACKLEG OF CATTLE.

Although this disease is not listed in the Law dealing with the notifiable infectious diseases of live stock, it is probably the commonest infection of cattle in the Island. Fortunately it is very effectively prevented by appropriate methods of vaccination with which most cattle owners are well acquainted. Accordingly there is no good reason why losses from this cause should at any time be great.

Of the various forms of vaccines in use to immunize cattle against this disease the "natural aggrsins" from all accounts are of first importance and dependability. Occasional failures to secure immunity are the experience of many live stock owners. If everything in connection with such cases were known it is probable that the immunizing agent is the least to be blamed. It should be remembered that all vaccines deteriorate rather quickly, unless they are kept cold and away from light. In this country it is not always easy to keep such products as they should be kept, therefore it is advisable that fresh material be obtained for seasonable vaccination operations.

6. SWINE FEVER OR HOG CHOLERA.

Generally known in the Island as "Hog Sick," it is infectious and highly fatal.

In the latter part of 1923 and early months of 1924 a widespread outbreak of this disease decimated the swine in St. Andrew and western St. Thomas. The efforts then made to control its spread were relatively expensive and a failure.

After this experience and in view of the general method of keeping swine, namely, permitting them to run at large to the annoyance and loss of every one except their indifferent owners, it was clear that no method of controlling such a highly infectious disease as Swine Fever could avail. Accordingly it was recommended that the Rules and Regulations for dealing with this disease as published in Gazette of May 3rd, 1923, should be revoked. This revocation was accomplished by Order made on June 8th, and published in the Gazette of June 17th, 1926.

From past experience it is evident that many of the small settlers take Swine Fever, or as it is generally spoken of "Hog Sick," as one of the strange visitations on them and for this and other reasons it is well nigh impossible in control work to get any co-operation.

As there is a very effective means of immunizing swine against this infection, namely the Anti-serum and Virus method of vaccination, it is hoped that owners who really value their swine may be induced when necessity arises to have them so treated.

Only one occurrence of this disease was reported during the year. This when investigated was negative for Swine Fever. This statement regarding the disease is probably far from representing the true state of affairs. Probably many other outbreaks have occurred and not been reported.

7. TUBERCULOSIS OF CATTLE.

No survey of the prevalence of this disease in dairy or other herds has as yet been undertaken. Even if such work had been authorised it would not have been possible to devote sufficient time to it for satisfactory results.

8. TICK CONTROL UNDER DIPPING TANK ORDERS.

Between Feb. 26th and March 20th most of the Dipping Tanks in St. Andrew, Portland and the eastern portion of St. Mary and St. Catherine were visited for inspection.

Twenty-nine tanks on the thirty-three premises visited were actually inspected. Twenty-seven of the twenty-nine were in use, two due to leaking or lack of water were not being used.

Cattle in varying numbers were inspected for tick infestation at twenty-one of the thirty-three places visited. On fifteen of the twenty-one places where cattle were available for inspection the animals were "clean to fairly clean," on six places the cattle were decidedly "ticky," thereby showing irregular or improper use of the tanks.

All stock owners interviewed on the survey trips expressed their conviction of the great value of the dipping method in tick control.

In the majority of instances fairly systematic dipping is practised. In a few cases regular dipping has so reduced tick infestation that the need for a continuation of periodic dipping once every fourteen days is not so evident as in the past, but if such an attitude is maintained severe infestation is certain to result.

The dipping of horses, mules and asses is not generally practised. Many owners object to the dipping of these animals on the grounds of risk of injury. Only two of the thirty three properties visited make it a regular practice to dip these animals, two dip them occasionally and three wash them when they are regarded as very "ticky."

During the year *three* additional tanks have been registered with the Department, making a total of 261 registered Dipping Tanks in the Island.

9. SO-CALLED NIGHTSHADE POISONING.

The Jamaica "nightshade" is not Belladonna, but a variety of Urechites. It is generally reputed to be a poisonous plant to live stock. On more than one occasion death of cattle from this plant has been reported as anthrax. The only similarity that I can discover in mortality from these two causes is the sudden death of apparently healthy animals.

The post mortem appearance of anthrax is characterized by bloody effusions under the skin, and in the abdominal cavity, marked acute inflammatory changes of the intestines, enlargement and softening of the spleen, black and tarry appearance of the blood with little or no coagulation and blood spots on the surface of the lungs, etc. On the other hand in nightshade poisoning there is no appreciable gross tissue change.

As far as I have been able to determine there are no signs of poisoning immediately after the ingestion of the plant. Death occurs, however, under rather peculiar and interesting circumstances. Animals in the pasture may appear quite normal, but when driven to the pen or if roped, chased or in any way made to exert themselves, they are suddenly seized with a quivering of the muscles, fall to the ground and die in 10-15 minutes.

The late Mr. J. J. Bowry studied this plant when in the service of this Colony as Island Chemist. Interesting notes of his work may be found in the Jamaica Handbook of 1881. Therein it will be seen that he found only the yellow-flowered variety to be poisonous and not the white flowered plant. Further, that death in experimentally fed cats, mice and pigeons was usually long delayed when small repeated doses of the active principle of the plant are administered; that the plant is very toxic in that 1/100 grain of its active principle killed a full grown cat and that death was due to its paralyzing effect on the musculature of the heart. These symptoms in test animals agree so closely with observations in the field on cattle that there is hardly any doubt that "nightshade" is responsible for death of many cattle in certain parts of the Island.

While the fresh leaves of the plant are bitter and irritant to the mouth and are therefore not usually eaten by animals, the dried leaves as well as the isolated active principle have no unpleasant effect upon the tongue for some time after ingestion. This is due to the slowness with which the saliva dissolves the active principle. Accordingly, although cattle probably seldom eat the fresh plant, they might easily consume the dried leaves mixed or not with other fodder of the pasture.

On one property where the annual loss of cattle from this cause was considerable, the owner has taken steps to dig out most of the "nightshade" in pastures where losses had occurred. Since doing so the annual deaths from poisoning have been almost nil.

When eradication of the plant is undertaken it is necessary to remove or burn the up-rooted plant, for it is clear that the dried leaves and vines are of especial danger to animals.

10. INSPECTIONS OF ANIMALS FOR EXPORT.

Date.	Animals.	Origin.	Destination.
28.2.26	5 cows	Bushy Park, St. Catherine	Span. Honduras
25.2.26	1 bull, 10 cows	Do.	do
22.10.26	1 Nellore bull	Hope Stock Farm	Costa Rica

11. INSPECTIONS OF IMPORTED ANIMALS.

Cattle.—3 pure bred bulls—one Jersey for the Government Stock Farm at Hope, two Herefords from Canada for the Atlantic Fruit Co.

Horsekind.—One mare from the United States for racing purposes.

Sheep.—Eight sheep from Canada.

Swine.—Three swine from Canada.

Dogs.—Forty-four dogs, all from Great Britain.

Circus Animals.—1 horse, 4 lions, 3 tigers, 1 bear, 1 sheep, via Cuba.

S. LOCKETT, V.M.D.

Government Veterinary Surgeon.

9.2.27.

Report on American Foul Brood Disease of Bees for 1926.

1. The 1926 outbreak may be dated from early July when the owner of an apiary near the Four Milestone on the Kingston-Spanish Town main road reported his bees to be affected with a disease causing "dwindling" of many colonies followed later by their extinction. It would appear, however, from information subsequently obtained that the apiary at the Four Milestone was affected for some months before the owner actually notified the Department. As so frequently happens in such cases he assigned his losses to other causes and so continued to do until conditions became so bad that he made report of his troubles.

When the affected apiary was examined the affected colonies showed a condition of the brood, which, though suggestive of American Foul Brood, lacked some of its characteristics. Accordingly affected comb was submitted to the Bureau of Entomology of the United States Department of Agriculture for differential diagnosis, with the result that the infection was reported to be American Foul Brood.

2. While the entity of the disease was under discussion, measures were instituted for its suppression under the name of the "Four Mile Brood Disease". Later, when the infection was established as American Foul Brood, the same measures were continued under a new Order for dealing with Foul Brood of Bees.

3. During July, August and September, Mr. C. N. Eddowes served as Inspector of Apiaries to the Department and made a survey of the extent of infection in the area of Kingston and St. Andrew. Consequent upon his resignation as Inspector at the close of September the work of supervising the outbreak was assigned to Mr. C. C. Gowdy, Government Entomologist and the writer, with Mr. Arthur L. Holt and Mr. Henry S. Holt as Inspectors of Apiaries.

4. Since taking charge of the campaign of suppression on October 10th last, particular attention has been paid to the infected apiaries discovered by former Inspector Eddowes in his preliminary survey and to other apiaries situated in Kingston and the lowlands of St. Andrew. No infection has been reported or discovered by the Inspectors up to the close of the year in the hill apiaries of St. Andrew.

5. At the close of the year infection from all accounts still remained confined to Kingston and the lowlands of St. Andrew, except one apiary near Yallahs in which one suspiciously affected colony was discovered and immediately destroyed and further spread of infection arrested so far.

A single report was also received from an apiary in Port Antonio, Westmoreland. This would appear to be a false alarm in that the comb submitted for examination showed no traces of Foul Brood and no developments of the suspected disease have been received since the comb was forwarded to the Department.

6. Since the inception of the work of control in July last

(i) 25 of the 106 listed apiaries in Kingston and St. Andrew have shown infection in varying degrees, i.e., 23.5%.

(ii) Eight of the above 25 infected apiaries have been completely destroyed.

(iii) In the 25 infected apiaries numbering approximately 936 hives, 263 colonies were destroyed by burning as required under the Law—211 colonies in the eight totally destroyed apiaries and 52 colonies in the other 17 infected apiaries.

7. At the close of the year all known infected colonies in Kingston and St. Andrew had been burnt and indications pointed to the arrest of infection in all but 5 or 6 apiaries.

This may be only a temporary improvement in the situation, for the infection is very insidious in its behaviour and consequently the course of events will require watching for some months.

8. No satisfactory explanation of this the second occurrence of American Foul Brood of Bees in Kingston and St. Andrew seems possible.

The chief sources of the introduction of infection are honey and diseased bees. Both these are prohibited entry into the Island, except queen bees under a system of inspection which is considered an adequate safeguard against infection from this source. It has been suggested that the recent outbreak is an after-math of the 1918 infection. Although this theory is an improbable one in view of the drastic manner in which that outbreak was dealt with, namely, the incineration *in toto* of all apiaries (infected and non-infected) within a 2-3 mile radius of the Parish Church of Kingston, yet it must be admitted that infections of this nature have strange ways of lying latent when once introduced, to re-appear in active form under favourable conditions.

S. LOCKETT,

"Person" under the Law.

10.2.27

V.—PLANT DISEASES AND PESTS.

Advisory Committee on the Banana Industry.

The members of the Committee during 1926 were:—The Director of Agriculture, J. R. Johnson, Esq., P. Lindo, Esq., succeeding the late S. S. Stedman, Esq., the Hon. J. H. McPhail, R. P. Simmonds, Esq., J. Barclay, Esq., O.B.E., G. J. Goble, Esq., succeeding C. J. Veitch, Esq., F. A. Cory, Esq., the Hon. L. A. Isaacs, and the Hon. T. J. Cawley. Mr. Simmonds resigned in October. The Government Entomologist acted as Secretary for eight months; Mr. A. E. deCordova acted for four months for Mr. Cory; Mr. G. Baxter acted for two months for Mr. Goble.

Three ordinary meetings of the Committee were held during the year and one special meeting under the Presidency of His Excellency the Governor.

A large proportion of the business was transacted by the circulation of papers, eighty-four papers being submitted to the members of the Committee during the year.

The most important problems considered by the Committee were:—

- (1) The Banana Trash Order, 1925. It was decided to recommend that the Order should be so amended as to permit only those bananas being carried to licensed buying stations for sale for export being wrapped in trash, and this recommendation was given effect to by the promulgation of an Order cited as "The Protection from Plant Disease (Banana Trash) Order, 1926."
- (2) It was considered advisable to prohibit the growing of root crops amongst bananas in certain areas defined by the Director of Agriculture and that in all other areas compensation for destroyed bananas should only be paid where bananas are grown free from root crops.
- (3) It was decided to extend the application of the 'reduced treatment' adopted for the Parish of Portland in 1925 to the Parish of St. Mary.

On the representation of the Committee, the Government authorized the publication of the then Microbiologist's Report on the Present State of the Banana Industry in Portland.

Panama Disease was discovered in new areas at Mt. James, Spaldings, Upper Manchester and Upper Westmoreland.

Thirty-four convictions were obtained against persons violating the Banana Trash Order, 1925, and seven against persons violating the Panama Disease Law.

Under Section 1 of Law 10 of 1925, "A Law to prevent the introduction and spread of Plant Disease", the Governor in Privy Council declared the Cleopatra Banana Beetle to be a notifiable Plant Disease within the meaning of that Law.

The official figures for cases of this disease treated during the year 1926 are as follows:—

Months.	Diseased Plants.	New Cases.	Recurrences.	Total Cases.
January ..	1,664	193	695	888
February ..	1,959	180	892	1,072
March ..	2,281	214	935	1,149
April ..	1,779	137	847	984
May ..	2,063	182	898	1,080
June ..	1,600	171	763	934
July ..	1,446	108	747	855
August ..	1,206	63	594	657
September ..	1,278	77	637	714
October ..	1,432	84	679	763
November ..	2,169	152	922	1,074
December ..	2,274	149	985	1,134
Total 1926. ..	21,151	1,710	9,594	11,304
Total 1925. ..	14,199	1,832	5,871	7,703

C. C. GOWDEY,
Entomologist and Acting Secretary.

BANANA BREEDING EXPERIMENTS.

Systematic efforts to evolve an "immune" seedling Banana by cross-fertilisation were initiated in 1924. During 1925 there were raised at Hope Experiment Station:—

- 7 Ram Kela x Musa Kewensis
- 2 Rubra x Musa Kewensis
- 6 Whitehouse x Kewensis

The most advanced of these seedlings of 1925 are expected to fruit between August and December, 1927. In 1926 our operations were extended to Castleton Gardens where 3 seeds of the cross, Gros Michel (Jamaica) x Robusta (an immune variety), have already been obtained. One plant of this cross has developed at the time of writing and is growing healthily.

The pollinations at Castleton which were at first without result (240,000 pollinations without obtaining a single banana seed) have recently shown encouraging results. Four hundred good seeds of the following crosses have recently been obtained:—

Ram Kela x Kewensis
Whitehouse x Kewensis
Honey x Kewensis
Apple x Kewensis
Gros Michel x Kewensis

Pollination is now being exclusively effected with pollen from edible varieties of banana.

New Varieties:—The "Giant Fig" has been obtained from Grenada and found to be identical with the "Robusta". The "Bumelan" from Dutch Guiana is also being tested and is apparently of the "Robusta" type. Plants of the "Lacatan" have been kindly promised by the Imperial College of Tropical Agriculture in Trinidad.

Three "Sports" of the Jamaica Banana are being tested for disease resistance; these are called the "Weeping Jamaica", "Glengoffe" and "Pink Jamaica".

Credit is due to the Supervising Inspector, Mr. J. B. Sutherland, for his enterprise and interest in supervising these experiments.

A "high-altitude" Station for breeding bananas has been established in the Blue Mountains at the highest elevation at which the Jamaica Banana can produce fruit. As the ordinary Plantain seeds spontaneously at this site it is hoped to be favourable for the production of banana seeds by cross-fertilization.

Strong evidence has been obtained in two cases of the natural production of the "Robusta" Banana by accidental crossing of the China with the Jamaica Banana.

Typical Robusta Bananas were found in remote places where China and Jamaica Bananas had been grown together and where no plants of the recently introduced "Robusta" could possibly have been planted.

The work of Banana breeding is now considered to be of first class importance for the preservation of our premier industry which is being threatened by the steady spread of Panama Disease despite our best efforts to check it.

A new Banana that is immune to Panama Disease would effect an immediate solution of this problem.

H. H. COUSINS,
Director of Agriculture.

Report of Government Microbiologist.

Owing to the transfer of Mr. C. G. Hansford, M.A., to Uganda this office has been vacant for the greater part of the year. The Supervising Inspector of Plant Diseases carried out the culture tests for diagnosis of Panama Disease. Mr. F.E.V. Smith, B. Sc., the newly-appointed Government Microbiologist, is expected to arrive in the Colony on the 26th April.

Report of the Government Entomologist.

During the period under review I acted as Director of Agriculture for one month and my services were loaned by the Government to the United Fruit Company for two months to investigate an attack by the Banana Fruit-Scarring Beetle, *Colaspis hyperchlora*, Lef., in Santa Marta, Republic of Columbia.

The insects of economic importance dealt with during the year are referred to under their food plants:

Banana.—There is little new information to record with regard to the Banana Borer, *Cosmopolites sordidus*, Germ. It has been reported from two new localities—Balaclava and Catadupa. Experiments with Paradichlorobenzene and Seekay (crude Paradichlorobenzene) are being conducted with a view to the protection of re-plants in infested areas and so far the results appear to be somewhat promising. The demonstration plots at Balcarres, Glengoffe and Russell Hall having justified the purpose for which they were established, namely, to prove to the banana growers that this insect can be controlled in badly infested areas by systematic trapping, clean cultivation and the destruction of its breeding places, it has been decided to discontinue the demonstration plots at the expiration of the present financial year. I wish again to record my appreciation of the interest taken and the thoroughness with which my recommendations were put into practice by the Agricultural Instructors who supervised these demonstration plots.

Three of the largest manufacturers of banana figs sought advice for the control of insects attacking this product. The insects concerned were the Nitulid Beetle, *Carpophilus dimidiatus*, (F.), the Rice Weevil, *Sitophilus [Calandra] oryza*, (L.), the Mediterranean Flour Moth, *Ephestia kuehniella*, Zell., the Saw-toothed Grain Beetle, *Oxyzaepophilus [Silvanus] surinamensis*, (L.), and the Cigarette Beetle, *Lasioderma serricorne*, F. Some of the infestation by these species undoubtedly occurs in the factory, but undoubtedly infestation also occurs in the stores.

Citrus.—The Citrus Black Fly, *Aleurocanthus woglumi*, Ash., continues to be much in evidence, and the same remark applies to the Purple Scale, *Lepidosaphes beckii*, (Newm.), the Snow Scale, *Pinnaspis [Hemichionaspis] minor*, (Mask.), the Florida Red Scale, *Chrysomphalus [aonidium]*, (L.), and the Articulated Scale, *Selenaspidus articulatus*, (Merg.). Experiments have shown that the two new oils, Sunoco and Wool Soap, are the best means, other than by fumigation, of controlling the scales.

Specimens of the Bagworm, *Oiketicus abbottii*, Grote, were received from one plantation where it attacked oranges.

Experiments with Paradichlorobenzene and Seekay as control measures against the larvae of the Fidler Beetle and other root-grubs attacking the roots of grapefruit and orange proved very effective indeed.

Sugar Cane.—Attacks by the Moth Borer, *Diatraea saccharalis*, F., the Mealy Bug, *Pseudococcus sacchari*, (Ckll.), and the Sugar Cane Yellow Aphid, *Sipha flatus*, (Forbes), were reported from the eastern part of the island.

Outbreaks of the West Indian Cane Fly, *Stenocranus sacchivorus* (Westw.), occurred in the Vere District and St. Thomas, resulting in the serious retardation of the plants. The attacks were especially serious on the White Transparent and B.H. 10 (12) varieties, whereas the Badilla, Uba and 11569 varieties growing amongst or near the other varieties were but slightly, or not at all, attacked and no retardation of growth resulted. The "fly" was attacked by a fungus and by the Assassin Bug, *Zelus rubidus*, Lep. and Serv., but neither proved to be even a moderately effective natural control.

The usual defoliating larvae, *Cirphis latiuscula*, H.-Sch., *C. humidicola*, Guen., the Fall Army Worm, *Laphygma frugiperda*, Sm. & Abb., and the Looper Cutworms, *Mocis repanda*, (F.), and *M. punctularis*, (Hubn.), occurred during the autumn, but their attacks were mild in comparison with those of other years.

The "White Ant," *Leucotermes rippertii*, (Ramb.), was responsible for some damage in certain localities.

A beetle, *Oxacis schistacea*, Kirsch, occurred in St. Thomas on ratoons, but apparently caused but little damage. This beetle has not hitherto been recorded as occurring in this island.

Corn.—Larvae (wireworms) of the Click Beetles, *Melanotus* spp., were reported as causing considerable damage to young corn.

The same defoliators mentioned above under Sugar Cane attacked this crop.

The Rice Weevil, *Sitophilus* [*Calandra*] *oryza*, (L.), attacked stored corn.

Coconut.—Specimens of the Bagworm, *Oiketicus, abbottii* Grote, and the Mealy Bug, *Pseudococcus nipiae*, (Mask.), were submitted as attacking this crop.

Tobacco.—The Cigarette Beetle, *Lasioderma serricornis*, F., attacked stored tobacco leaves.

Grape.—The Scale Insect, *Aspidiotus uvae*, Comst., and the Boring Beetle, *Amphicerus* [*Apate*] *terebrans*, (Pall.), were pests on this plant.

The Insect Collection.

A large number of specimens of insects have been added to the Collection. Many of these are new to science. The types of the new species have been deposited in the British Museum (Natural History) for safety.

Publications.

Bulletin 4—Pts. 1 and 2, Catalogus Insectorum Jamaicensis.

Bulletin 4—Pt. 3, Catalogus Insectorum Jamaicensis. (In preparation)

Bulletin 5—Insecticides and Fungicides. (In Press)

Article—"The Banana Fruit-Scarring Beetle", published in the Bulletin of Entomological Research.

C. C. GOWDEY, B.Sc., F.E.S.,
Government Entomologist.

VI.—AGRICULTURAL EDUCATION.

Report of Headmaster, Farm School, Hope.

Sir,

I have the honour to submit my report for 1926.

1. *Numbers*.—The numbers show a satisfactory increase for the year, the figures being:—
Easter Term 39, Midsummer Term 42, Christmas Term 40.

There is a growing demand for admission to the School as we had during 1926, 22 applications for admission in the January of 1927 with only 8 vacancies available.

2. *Students*.—The following Students completed their course and were awarded Certificates:—

E. W. Falloon, Swift River.

D. N. Brown, Latium.

D. L. McCleod, Point.

W. A. DeLeon, Golden Grove.

A. C. Bucknor, Buff Bay.

H. S. Wright, Cross Keys.

3. Owing to the increase in the numbers we had to abandon the temporary reading room which, we made during 1925. The loss of this facility was felt by the Students.

4. The usual curriculum was carried out. The Students did considerable work with the animals of the Stock Farm and in the Experiment Station.

The addition by the Stock Farm of a modern butter equipment has added interest in the work.

The lack of a proper lighting system and a Recreation room was much emphasised as the School was full.

ROY S. MARTINEZ,
Headmaster,

Report of Medical Officer.

I have the honour to report that the general health of the Students of the Hope Farm School during the year ending December 31, 1926, has been excellent. One Student was sent home owing to a cardiac affection:—The Students and servants were inoculated against Enteric and Vaccinated against Smallpox. The Sanitary conditions have been good.

LEWIS A. CROOKS,
M.B. & C.M. (Edin).

VII.—LIVESTOCK.

A.—GOVERNMENT STUD FARM, GROVE PLACE, MANCHESTER.

Live Stock, Grove Place Pen, 1926.

	1 Zebu Jersey Bull
	1 Ayrshire Bull
	2 Aber-Angus Bulls
	30 Bull Calves of 1924 and 1925
41	7 Bull Calves of 1926
198	190 Native Dairy Cows
	8 Draft Cows
	8 Pedigree Heifers
	12 Grade Native Heifers
	1 Grade Angus Heifer
	37 Grade Ayrshire Heifers
	20 Grade Guernsey Heifers
	1 Grade Hereford Heifer
	13 Grade Hissar Heifers
	11 Grade Holstein Heifers
	56 Grade Jersey Heifers
	1 Grade Montgomery Heifer
	13 Grade Red Poll Heifers
	13 Grade Swiss Heifers
188	2 Grade Zebu Jersey Heifers
11	11 Working Steers
438	

Horsekind:—

1 Imported Horse "Lembach"
1 Imported Proof Ass "Kentucky Boy"
11 Brood Mares
6 Fillies
1 Colt
2 Geldings
14 Mules
3 Donkeys

39 Head

The following is the Summary of the Valuation of the Live Stock at Grove Place on December 31, 1926:—

	£	s.	d.
Cattle	3,295	5	0
Horsekind	925	0	0
Total Pen Stock	4,220	5	0

Beef Cattle	530	0	0
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Indian Cattle	945	0	0
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SERVICES OF BULLS AT GROVE PLACE, JANY. 1ST—DECEMBER 31ST, 1926.

Bulls.	Visiting Cows.	Farm Cows.	Total.
Hereford "Peacemaker"	9	..	9
Brown Swiss "Trumpeter"	2	7	9
Devon "Highfield Nobleman"	16	4	20
Jersey "Hon. Mr. Polo"	2	..	2
Jersey "Hope Pogis"	15	33	48
Red Poll "Pilot of Hope"	5	2	7
Red Poll, "Panama's Midas"	11	..	11
Ayrshire "Cyril"	9	4	13
Ayrshire "Rubicon"	..	1	1
Ayrshire "Food Controller"	9	9	18
Hissar "Pride of the Punjab"	1	10	11
Montgomery "Dairyman of Pusa"	..	4	4
Aber. Angus "Etrurian"	8	..	8
Montgomery Guernsey "Cortes"	5	4	9
Total	92	78	170

B.—GOVERNMENT STOCK FARM, HOPE.

Live Stock "Hope Stock Farm," 1926.

	1	Imported Red Poll Bull
	3	Native Red Poll Bulls
	3	Imported Red Poll Cows
	3-26	Native Red Poll Cows and Heifers
	1	Imported Jersey Bull
	3	Native Jersey Bulls
	1	Imported Jersey Cow
	33-28	Native Jersey Cows and Heifers
	1	Native Guernsey Bull
	1	Guernsey Stag
	7	5 Native Guernsey Cows and Heifers
	1	Imported Ayrshire Bull
	4	Native Ayrshire Bulls
	2	Imported Ayrshire Cows
	11	4 Native Ayrshire Cows
	6	6 Brown Swiss Cows and Heifers
	3	Native Nellore Bulls
	9	6 Native Nellore Heifers
	99	
	8	Grade Montgomery Bulls
	3	Grade Hissar Bulls
	2	Grade Jersey Bulls
	1	Grade Red Poll Bull
	5	Grade Guernsey Bulls
	1	Grade Indian Bull
	115	Dairy Cows
145	10	Foster Mothers
	10	Grade Native Heifers
	1	Grade Angus Heifer
	7	Grade Ayrshire Heifers
	29	Grade Guernsey Heifers
	6	Grade Hissar Heifers
	1	Grade Holstein Heifer
	40	Grade Jersey Heifers
	14	Grade Montgomery Heifers
	5	Grade Nellore Heifers
114	1	Grade Swiss Heifer
16	16	Plough Steers
	374	
		<i>Horsekind:—</i>
14	14	Mules
		<i>Poultry:—</i>
	1	Pen Rhode Island Reds
		<i>Bees:—</i>
		Nil

WEEKLY ANALYSIS OF MILK SUPPLIED TO THE PUBLIC HOSPITAL AND LUNATIC ASYLUM
BY THE STOCK FARM, 1926.

Quarter ending.	Solids.	Fat.	Sp. Gravity.	Solids not Fat.
March 31, 1926 ..	12.37	4.09	1.0292	8.28
June 30, 1926 ..	12.62	4.05	1.0304	8.57
September 30, 1926 ..	13.52	4.52	1.0318	9.00
December 31, 1926 ..	13.34	4.60	1.0286	8.74
	12.96	4.31	1.0300%	8.65

The following is a summary of the valuation of the Live Stock at the Farm in December, 1926:

Cattle	£7,696
Horsekind	281
Poultry	31
Bees	nil
Total	£8,008

MILK YIELD, DAIRY HERD 1922, 1923, 1924, 1925, 1926.

Imperial Quarts per diem.

Month.	1922.	1923.	1924.	1925.	1926.
January ..	283.5	348.4	264.4	304.9	401.0
February ..	264.5	347.2	238.2	324.0	386.3
March ..	294.9	307.6	249.3	369.3	414.4
April ..	259.6	248.9	224.2	441.9	435.8
May ..	300.1	318.7	271.4	513.7	453.2
June ..	289.8	369.3	337.8	504.1	485.2
July ..	304.3	324.6	376.1	457.9	511.4
August ..	310.5	303.0	356.0	464.0	567.6
September ..	314.4	320.6	365.6	438.4	519.2
October ..	270.8	270.3	370.4	432.9	526.8
November ..	296.3	286.8	326.3	393.1	492.1
December ..	298.0	288.5	314.6	396.7	473.3
	290.5	314.2	307.9	420.1	472.2

RECORD OF DAIRY HERD MILK YIELD, 1926.

Month.	Av. No. of Cows.	Total qts. per mensem.	Av. per Cow qts.
January ..	100	12,432.7	4.0
February ..	97	10,817.8	3.9
March ..	95	12,846.8	4.4
April ..	87	13,073.1	5.0
May ..	84	14,048.4	5.4
June ..	91	14,557.5	5.3
July ..	97	15,853.6	5.3
August ..	95	17,594.8	5.9
September ..	98	15,576.1	5.3
October ..	104	16,331.9	5.1
November ..	103	14,763.7	4.8
December ..	100	14,673.4	4.7
	96	172,569.8	4.9

MILK YIELD, 1926, HOPE DAIRY HERD.

	Cow.	Breed.	Age in years.	Average content Milk fat	Lbs. of Milk.	Milking Weight Lbs.	Max. Milk yield Imp Qt.	Sale Value at 8d. per Qrt.
							£ s. d.	
1	Norbrook 2nd	Grade Holstein	7	3.8	14,243	1,132	25.5	183 5 2
2	Kara 1st	do	6	3.7	6,495	1,000	23.1	83 11 7
3	Dodo 1st	do	7	3.8	6,418	1,188	17.6	82 11 5
4	Freda 1st	do	6	3.3	6,044	884	10.0	77 15 1
5	Diva 4th	Grade Zebu Jersey	9	4.2	6,033	1,004	11.6	77 12 6
6	Ellenstine 2nd	Zebu Jersey	9	4.2	5,798	850	12.7	74 12 0
7	Monica 1st	Grade Zebu Jersey	11	3.9	5,649	850	8.6	72 13 7
8	Monica 6th	Grade Brown Swiss	5	4.0	5,320	870	9.3	68 9 0
9	Shrew 13th	Grade Guernsey	4	3.6	5,257	934	8.9	67 12 2
10	Fifi	Grade Jersey	11	4.2	5,255	890	11.3	67 12 0
11	Cognac 2nd	Grade Holstein	4	4.1	5,200	818	11.8	66 17 9
12	Beryl 1st	do	6	3.5	5,170	1,308	12.4	66 10 3
13	Bess 1st	Grade Guernsey	6	4.2	5,168	942	10.8	66 9 9
14	Dodo 2nd	Grade Holstein	6	3.7	5,138	898	11.5	66 2 1
15	Sola 5th	Grade Zebu Jersey	7	4.0	5,086	1,008	11.8	65 8 8
16	Nana	Grade Holstein	9	4.1	5,085	880	11.8	65 8 2
17	Badge 2nd	Zebu-Jersey	8	4.8	5,070	888	11.0	65 4 4
18	Sola 9th	Grade Jersey	4	4.6	4,995	890	14.5	64 5 5
19	Blossom 1st	Grade Zebu Jersey	8	3.6	4,978	870	13.5	64 1 2
20	Bunny 2nd	do	6	4.3	4,713	940	8.3	60 12 9
21	Baby 1st	Grade Jersey	8	4.5	4,638	832	8.6	59 13 4
22	Pobess	Grade Red Poll	12	3.6	4,537	1,050	10.4	58 7 7
23	Mirage 1st	Grade Guernsey	6	4.2	4,516	802	7.1	58 2 1
24	Etta of Hope	Jersey	6	4.7	4,482	758	11.5	57 13 1
25	Red Girl 3rd	Grade Jersey	4	4.1	4,472	856	8.1	57 10 7
26	Shrew 2nd	Zebu-Jersey	11	4.9	4,460	1,328	7.7	57 7 6
27	Pigeon 2nd	Grade Brown Swiss	5	4.4	4,454	952	9.1	57 6 2
28	Baby 2nd	Grade Montgomery	3	4.4	4,450	840	6.7	57 4 11
29	Monica 7th	Grade Guernsey	4	3.6	4,309	860	10.4	55 8 3
30	Melinite	Grade Zebu Jersey	9	3.8	4,290	846	4.4	55 4 1
31	Diva 2nd	do	11	3.9	4,278	1,026	11.8	55 0 7
32	Mystery	Grade Jersey	5	4.1	4,222	774	16.0	54 6 7
33	Paste	Zebu-Jersey	5	4.2	4,216	822	9.1	54 4 9
34	Beetroot	Holstein-Red Poll	7	3.8	4,210	960	9.8	54 3 2
35	Pet 1st	Grade Zebu Jersey	7	3.6	4,193	820	12.2	53 19 1
36	Monica 12th	Grade Guernsey	6	4.8	4,154	852	11.8	53 9 1
37	Rosette 2nd	do	8	3.7	4,153	992	13.7	53 8 8
38	Marchioness 12th	Grade Montgomery	4	4.8	4,020	900	8.2	51 14 7
39	Shrew 11th	Grade Guernsey	7	4.1	4,012	916	11.6	51 12 3
40	Foxy 1st	Zebu-Jersey	9	4.3	3,998	800	6.6	51 8 8
41	Quail 4th	Grade Brown Swiss	5	3.7	3,995	724	9.1	51 7 11
42	Quail 2nd	Zebu-Jersey	9	4.2	3,989	816	9.1	51 6 5
43	Diva 8th	Grade Guernsey	4	4.4	3,983	724	6.9	51 4 9
44	Vickie C.	Grade Montgomery	3	4.9	3,938	792	6.2	50 13 2
45	Diva 7th	Grade Guernsey	5	4.2	3,929	740	8.6	50 10 10
46	Sola 2nd	Grade Zebu Jersey	10	4.5	3,923	1,178	8.9	50 9 1
47	Dolly 1st	Grade Brown Swiss	5	4.3	3,912	860	9.6	50 6 9
48	Truth 4th	Grade Jersey	4	4.2	3,898	820	9.7	50 2 11
49	Lydite	Grade Holstein	15	3.8	3,859	890	7.4	49 12 11
50	Pussy	Grade Red Poll	11	4.1	3,849	930	11.3	49 10 2
51	Pogistine	Jersey	3	4.3	3,843	628	9.6	49 8 11
52	Hope Flighty 1st	Red Poll	3	3.8	3,811	785	11.5	49 0 7
53	Porosa 2nd	Grade Red Poll	5	3.5	3,803	900	14.1	48 18 5
54	Angel 11th	Grade Holstein	4	3.9	3,787	920	11.6	48 14 6
55	Cordite 22nd	Grade Jersey	4	4.4	3,779	710	8.5	48 12 7
56	Diva 22nd	Grade Guernsey	4	4.3	3,735	684	8.8	48 1 3
57	Fanny 2nd	Zebu-Jersey	8	3.8	3,735	912	10.3	48 1 2
58	Ada 1st	Grade Jersey	6	5.2	3,693	660	9.3	47 10 4
59	Lydia	Grade Ayrshire	4	3.9	3,684	848	8.1	47 8 0
60	Dodo 3rd	Grade Holstein	3	3.4	3,652	880	14.7	46 19 10
61	Bunny	do	10	3.5	3,580	1,200	4.7	46 0 9
62	Pansy P.	Jersey	3	4.5	3,542	592	8.8	45 11 2
63	Hector's Gem	do	7	4.6	3,495	802	5.9	44 19 3
64	Matilda 12th	Grade Jersey	4	4.3	3,458	770	6.3	44 9 10
65	May 4th	do	4	5.0	3,379	732	8.1	43 9 3
66	Hope Brisk 1st	Red Poll	7	3.5	3,350	1,030	12.8	43 2 1
67	Violet 2nd	Grade Zebu Jersey	9	3.8	3,297	957	12.1	42 8 5
68	Flora	Guernsey	6	4.2	3,278	740	9.6	42 3 5

STATEMENT OF ASSETS AND LIABILITIES.

L. Fo.	Assets.	£ s. d.	£ s. d.	L. Fo.	Liabilities.	£ s. d.
1.	Building ..	..	658 2 10	95	Jamaica Government ..	2,021 9 3
5	Machinery ..	..	701 8 11	239	Arthur McGrath ..	100 0 0
7	Furniture & Fixtures ..	..	353 1 6	218	Profit & Loss ..	9,453 9 1
11	Truck (Ford) ..	..	60 0 0			
15	Tools & Implements ..	..	64 10 0			
20	Vehicles & Harness ..	..	345 16 6			
23	Stores & Parts ..	..	73 19 0			
30	Food for Stock ..	..	493 0 10			
33	Plantation (Pines) ..	..	100 0 0			
40	Live Stock ..	..	6,800 10 0			
70	Public Hospital ..	122 1 1				
71	Jubilee Hospital ..	4 13 10				
73	Farm School ..	7 0 9				
75	Lunatic Asylum ..	79 0 4				
219	Mrs. L. Powell ..	0 0 3				
224	A. Edwards ..	0 12 0				
226	Dr. S. Lockett ..	0 4 4				
227	Dr. J. Myers ..	0 10 4				
230	Dr. R. Hewson ..	2 7 4	216 10 3			
	Cash (in Bank N.S.) ..	1,707 8 6				
	(in Hand) ..	0 10 0	1,707 18 6			
			<u>£11, 79 18 4</u>			<u>£11,579 18 4</u>

HOPE STOCK FARM WORKING ACCOUNT YEAR ENDING MARCH 31ST, 1926.

Revenue.	£ s. d.	£ s. d.	Expenditure.	£ s. d.	£ s. d.	£ s. d.
Credit balance at Treasury 1.4.25 ..	..	194 15 9	Wages—			
Milk Sales ..	4,869 6 5		Dairymen ..	..	352 6 10	
Stock Sales ..	1,080 15 7		Cartmen ..	..	155 13 8	
Rent ..	90 3 4		Students' work ..	..	39 2 0	
Poultry ..	31 13 3		Ranger ..	..	18 16 0	
Rearing Calves ..	20 15 0		Bonus & Reward ..	..	20 6 0	
Dipping ..	0 1 6		Moving Stock ..	..	2 19 10	
Pasturage ..	103 14 6		General ..	..	197 2 2	786 6 6
Truck ..	36 15 2					
Miscellaneous ..	493 4 4	6,726 9 1	Food for Stock purchased—			
Feed Sales (Reimbursed) ..	..	191 4 5	Oats ..	398 13 7		
			Bran ..	223 6 8		
			Cotton Seed Meal ..	808 0 0		
			Oil Meal ..	77 11 3		
			Hay ..	6 0 7		
			Gluten Meal ..	15 1 2		
			Powdered ..	31 12 11		
			Rock Salt ..	21 0 5	1,581 6 7	
			Harvesting & Mfg. ..			
			Corn Silage ..	..	118 11 0	
			Cutting & Carting ..	..	150 2 8	
			Forage Canes ..	..	120 18 8	
			Cutting and Carting grass ..	..	8 16 6	1,979 15 5
			Gathering Guinea Corn Seeds ..	..		
			Growing Crops—			
			Pines ..	..	95 10 10	
			Guinea Corn ..	158 16 6		
			Grass ..	4 1 0		
			Canes ..	47 12 1	210 9 7	306 0 5
			Repairs Machinery & Equipment—			
			New Fixtures & Equipment:			
			Dipping Tank ..	192 16 11		
			Bottom Yard ..	76 12		
			Bottom Yard Stanchions ..	66 5 8		
			Feed Boxes & Tins ..	29 3 2		
			Butter House ..	54 10 6		
			Butter House Machinery & Equipment ..	31 17 2		
			Gates ..	53 8 9		
			Blue Castle Dairy Yard ..	44 11 3		
			Mango Walk Dairy Yard ..	20 9 11		
			Mango Walk new road ..	9 7 3		
			Bull shed ..	5 15 0		
			Scale ..	42 8 2		
			Shelves for mangoes ..	1 7 0		
			Rubber Hose ..	8 9 9		
			Could's Pump ..	14 11 10		
			Steam Whistle ..	5 9 8		
			Clipping Machine ..	19 16 2	677 0 5	
Carried forward ..		7,112 9 3				3,072 2 4

HOPE STOCK FARM WORKING ACCOUNT YEAR ENDING MARCH 31ST 1926, *continued*—

£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
<i>Revenue, contd.</i>		<i>Expenditure, contd.</i>		
Brought forward ..	7,112 9 3			3,072 2 4
		Repairs—		
		Water Tanks	7 17 10	
		Sterilizer	2 6 2	
		Machinery & Engine	94 19 6	
		Harness ..	9 10 3	
		Carts & Vans	84 14 1	
		Stables ..	21 11 1	
		Plough	26 4 3	
		Trailer ..	3 2 0	
		Yards ..	16 1 6	
		General ..	197 8 11	463 15 7
		Tools & Implements	29 14 0	
		General Stores ..	95 4 2	1,265 14 2
		Foreman ..	..	146 5 0
		Cleaning & Fencing—		
		Cleaning:		
		Twelve Stalls	5 3 6	
		Kintyre ..	23 5 0	
		Mango Walk ..	78 0 6	
		Elephant Grass	2 0 0	
		Blue Castle	84 8 4	
		General ..	30 18 6	223 15 10
		Fencing:		
		Blue Castle	35 15 6	
		Kintyre ..	35 1 1	
		Bull Pen ..	7 13 6	
		Yard ..	25 8 10	
		Calabash Piece	2 8 9	
		Isolation Camp	3 0 6	
		Mango Walk	12 19 3	
		General ..	148 10 9	270 18 2
		Rearing Calves	..	314 8 0
		King's House Pastures	..	72 15 5
		Purchase of Live Stock	..	627 8 8
		Truck ..	..	153 16 5
		Miscellaneous	..	324 9 4
		Balance in Treasury	..	640 15 11
	<u>£7,112 9 3</u>			<u>£7,112 9 3</u>

STATEMENT OF ASSETS & LIABILITIES 31ST MARCH, 1926.

<i>Liabilities.</i>	£ s. d.	£ s. d.	<i>Assets.</i>	£ s. d.	£ s. d.
Jamaica Government—			Live Stock—		
Advance for purchase of			Cattle 365 Head	7,818 0 0	
Live Stock ..	2,343 18 2		Horsekind 12 head	211 0 0	
Plus sale of 2 bulls from			Poultry ..	32 0 0	8,061 0 0
Stud Farm, Manchester	120 0 0				
	<u>2,463 18 2</u>		Dead Stock—		
Less Bull purchased by			Buildings ..	220 10 6	
Hopefor Stud Farm			Machinery ..	582 3 8	
Manchester ..	136 6 7	2,327 11 7	Furniture & Fixtures	440 9 0	
			Truck ..	80 0 0	
Surplus Assets or Net Profit		9,104 15 9½	Tools & Implements	76 14 0	
			Vehicles & Harness	240 6 6	1,640 3 8
			Stock on Hand—		
			Stores & Parts	98 13 10	
			Food for Stock	590 0 10	688 14 8
			Plantation—		
			Pines ..	..	95 10 10
			Property Account—		
			Kintyre Pen (Purchase Price)	..	306 2 4
			Balance in Treasury (on Working (A/c)		640 15 10½
		<u>£11,432 7 4½</u>			<u>£11,432 7 4½</u>

VIII.—GOVERNMENT LABORATORY.

Report of the Deputy Island Chemist.

The total number of samples analysed during the year ended 31st December, 1926 was 2,056, being an increase of 256 samples over the number for last year.

The samples are classified as follows:—

“A.” OFFICIAL.

(I) *Police—*

Human viscera and organs	..	..	34
Substances for poison	..	..	61
Medicines and Drugs	..	..	37
Coins, counterfeit	..	..	121
Coins, genuine	..	..	44
Counterfeiting exhibits	..	..	77
Explosives	..	..	3
Ganga	..	..	100
Miscellaneous	..	..	3

Under the Spirit License Law:—

Rums	..	..	11
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Under the Petroleum Law:—

Gasolines	..	..	7
Kerosines	..	..	2

Under the Adulteration of Food and Drugs Law:—

Fresh milks, genuine	..	..	19
Fresh milks, adulterated	..	..	8

Total Police 527

(II.) *Customs—*

Native and other wines	..	..	92
Rectified Spirits and Absolute Alcohols	..	..	26
Industrial alcohols	..	..	15
Flavouring extracts, etc.	..	..	5
Fuel Oils	..	..	15
Disinfectants and Insecticides	..	..	4
Condensed and Evaporated Milks	..	..	5
Gasolines	..	..	7
Miscellaneous	..	..	6

Total Customs 175

(III) *Department of Science and Agriculture—*

Animal viscera	..	..	3
Butters	..	..	21
Feeding Stuffs	..	..	5
Insecticides and Fungicides	..	..	5
Soaps (Local manufacture)	..	..	9
Rubber (Local manufacture)	..	..	6
Miscellaneous	..	..	13

Total 62

(IV) *Island Medical Office and Medical Officers of Health—*

Waters	..	..	29
Milks	..	..	6
Soaps	..	..	11
Drugs and Chemicals	..	..	5
Foodstuffs	..	..	6
Human Serum, Vomits, etc.	..	..	5

Total 62

(V) *Department of Public Works—*

Waters, potable and boiler feed	..	..	5
Gasolines	..	..	3

Total 8

(VI) <i>Government Railway—</i>					
Oils	..	..	..	..	1
				Total	1
(VII) <i>Institute of Jamaica—</i>					
Insecticides	..	..	..	..	2
Marbles	..	..	..	..	2
Metal objects	..	..	..	..	1
				Total	5
(VIII) <i>Parochial Boards—</i>					
Waters	..	..	..	..	6
Medicines	..	..	..	..	1
				Total	7
				Total Official	847

"B" AGRICULTURAL.

Soils and Subsoils	..	..	..	32
Agricultural Limes and Marls	..	..	..	8
Artificial Manures and Fertilizers	..	..	..	7
Canes and Cane Juices	..	..	..	53
Molasses, etc.	...	..	..	5
			Total	105

"C." GENERAL.

Stock Farm Milks	..	..	..	725
Cattle Dips	..	..	..	45
Rums	..	..	..	102
Sugars	..	..	..	86
Wines and Beers, Native and other	..	..	..	36
Waters, Potable	..	..	..	6
" Irrigation	..	..	..	8
" Boiler feed	..	..	..	3
Steam coals	..	..	..	11
Minerals and ores	..	..	..	13
Animal viscera (for poison)	..	..	..	4
Substances (for poison)	..	..	..	16
Foodstuffs	..	..	..	5
Fresh Milks	..	..	..	11
Drugs	..	..	..	3
Soaps	..	..	..	3
Tanning Materials	..	..	..	4
Miscellaneous	..	..	..	23
			Total	1,104
			Grand Total	2,056

OFFICIAL SAMPLES.

The 34 analyses of human viscera and organs were made in connection with 15 deaths. In 9 cases poison was found and recovered from the viscera as follows:—

- (1) 0.01 of a grain of Antimony from the organs of a male child.
- (2) Traces of Arsenic from the organs of a female adult and her infant.
- (3) Traces of Arsenic from the organs of a female adult.
- (4) 4.2 grains of Mercury from the organs of a male adult.
- (5) 0.6 grains of Morphine from the organs of a female adult.
- (6) Arsenic (Cooper's Dip) from the organs of a male suicide.
- (7) 0.05 grains of yellow Phosphorus from the organs of a male adult.
- (8) 0.5 grains of Arsenic from the organs of a female adult.

The substances examined for poison which yielded positive results were as follows:—

- (1) 9.5 grains of Antimony Chloride in Cod fish.
- (2) 30 grains of Antimony Chloride in Coconut oil.
- (3) Large traces of Antimony Chloride in a beverage.
- (4) 0.5 grains of Arsenic in a yam, submitted in connection with the death of a woman who died from Arsenical poisoning.

- (5) Large traces of Arsenic in uncooked yam.
- (6) 300 grains of Arsenite of soda in drinking water, alleged to have been placed therein by a man who had quarrelled with his wife and had threatened to injure her.
- (7) Powdered glass in food.
- (8) 6.75 grains of Arsenic (Arsenious oxide) in cooked food.
- (9) Two bottles containing Lysol, in a case of attempted suicide.
- (10) Traces of Sulphuric acid in a tumbler, and battery acid in a bottle in a case of attempted suicide.
- (11) 0.05 grains of yellow Phosphorus in water, and traces of yellow Phosphorus rat poison in a paper packet which was taken out of a vessel used for containing drinking water.
- (12) Sand and whale oil found in a bottle.
- (13) Large traces of Arsenic on a pillow.
- (14) 32 grains of Arsenic in a tin of condensed milk.
- (15) 35 grains of Arsenic admixed with a powder.
- (16) 0.6 grains of yellow Phosphorus found in food and in two utensils.
- (17) Quarter of an ounce of powdered glass found in cooked food.
- (18) Traces of yellow Phosphorus in a pan which had contained tea. Also one vial containing Steiner's vermin paste, which contains yellow Phosphorus as the poisonous ingredient.
- (19) Caffeine found on a horse's bit.
- (20) Caffeine found in the viscera of a horse.
- (21) 20 grains of ground glass admixed with sugar.
- (22) Powdered glass found admixed with a beverage.

91 certificates were issued to the Police for use in prosecutions, in accordance with the Island Chemist's Certificate Laws of 1902 and 1916, which is an increase of 8 certificates over the number issued for last year.

The total number of Police samples analysed is 155 more than the number analysed for the year 1925.

The increasing use of vermin pastes containing yellow Phosphorus for criminal purposes is striking, and indicates the necessity for the strict observance of the Drugs and Poisons Law both on the part of the Police and the retailers of these highly poisonous preparations.

Two cases of poisoning, fortunately without fatal results, were due to mistakes being made by the persons selling the wrong substance to the purchaser. In one case where it was alleged that Antimonial Wine was asked for, "Butter of Antimony" was supplied. In another case Jeyes' fluid was required as a drench for an animal and Cooper's Dip was supplied in its place.

The 37 medicines and drugs shows an increase of 23 samples over the number submitted last year. The majority of these are in connection with prosecutions under the Medical Law. In spite of the heavy penalties for the illegal practice of Medicine by "Quacks," yet the fines imposed do not appear to have a deterring effect on these offenders. The medicines are usually composed of decoctions of "bush," with common drugs such as rhubarb, asafoetida, aloes, chenopodium, and common saline purgatives.

The circulation of counterfeit coins appears to be on the increase, and the coiners appear to be using other metals such as copper and aluminium in their base coins, whereas formerly solder and tin were almost entirely employed. Counterfeit pennies made of lead were submitted for examination.

The three explosives which were analysed consisted of dynamite, detonators and fuse in connection with larceny of these dangerous materials. A "safe" method of analysis of the composition of the detonator was devised and carried out by the Deputy Island Chemist.

The number of Ganga Samples analysed shows an increase of 85 over last year's report. The detection of the growth and sale of this pernicious plant is in many cases due to the vigilance of the District Constables.

Only 27 samples of milk were submitted under the Foods and Drugs Law, and of these 29 per cent. were found to be adulterated.

The Customs samples numbered 175, being an increase of 39 samples over the number for last year. The number of native wines analysed for their alcohol content for the purposes of "drawback" on export is double the number submitted for test in 1925.

Apart from the examination of alcoholic liquids for the Customs the remainder of the samples submitted by that Department are comparatively small in number as questions regarding the interpretation of the Tariff Law are usually involved, and a technical opinion is considered desirable.

Analyses were made of different brands of imported butter and also locally made butters with a view to determining the correct proportion of salt to incorporate with the local article in order that the keeping properties might compare favourably with the imported article. It was found that with a salt content of from 1 to 2% and a moisture content of not more than 16% the butter would be equal to the imported article as regards keeping properties and taste. Incidentally this investigation revealed the fact that the imported article which is sold as "Cooking Butter" is a mixture of oleo-margarine with coconut oil and a small percentage of butter fat. All the samples examined were found to be free from preservatives.

Nine soaps of local manufacture were analysed and advice was given to the manufacturers to enable them to counteract certain defects in their products, and improve the quality of their soaps.

Six samples of locally made rubber were examined both by chemical analysis and also by vulcanisation tests. Some of the specimens were of very good quality, and provided that an adequate supply of latex is available there is no doubt that good rubber could be produced in certain parts of the Island.

Experiments were carried out on curing cocoa without fermentation by attempting to effect the curing by means of the enzymes inside the cocoa nibs after destroying the vitality of the germ. It was concluded, from the results of the experiments, that the method was not a practical one, but is only of theoretical interest.

Of two insecticides analysed for the Government Entomologist one was found to consist of 93 per cent. of Kerosine mixed with 7 per cent. of methyl salicylate. The other so-called insecticide proved to be a mixture of crude ammonium sulphate with iron oxide, and consequently was more of a fertiliser than an insecticide, the latter term being incorrect.

Experiments were made to devise a satisfactory method for the detection of caramel and also aniline dyes used for colouring rum. A rapid and satisfactory method was evolved for differentiating between caramel and aniline dyes in alcoholic liquors.

Of the 62 samples analysed for the Island Medical Office and Medical Officers of Health, 29 consisted of potable waters for examination as to their fitness for domestic use. The 11 soaps were examined with regard to their chemical composition and suitability as to their use in Public Institutions in connection with the receipt of Tenders for the supply of these commodities. Various drugs, chemicals, vomits and human serum were analysed for the Government Bacteriologist, and where required standardisations were made.

Two Insecticides were analysed for the Institute of Jamaica with a view to determination of the composition and suitability for preserving books against the attacks of insects. Samples of marble taken from mural decorations in Port Royal Church, which showed signs of disintegration, were analysed and suggestions were made concerning the preservation of these monuments. An old Communion cup, which was believed to be made of pewter, was found to be composed of silver, the softness of the metal being due to the absence of alloy.

An inspection was made of the impounding reservoir at Red Hassall Dam in connection with the public water supply to Port Antonio. In times of drought the water develops a green colour and an objectionable odour due to the development of Algae. Samples of water were taken for analysis and microscopic examination, and a scheme was suggested whereby it is hoped to eliminate the trouble in future.

Owing to the outbreak of Dysentery in St. Catherine samples of the Spanish Town Waters were analysed with a view to the adoption of the "Excess Lime" method of water purification. Samples of lime were also analysed in this connection and recommendations as to the method and quantities of materials to be employed were made.

AGRICULTURAL.

The number of analyses made under this heading is more than twice the number analysed in 1925, the actual number being 105 as compared with 48.

32 soils and sub-soils were analysed in connection with manurial experiments.

Greater interest appears to be displayed in liming soils to correct for acidity, lime or marl being used for the purpose.

Many of the canes submitted for analysis were in connection with manurial experiments.

GENERAL.

Of the 1,104 general samples which were analysed 725 were samples of milk from the Stock Farm, being an increase of 47 over the number submitted last year. The quality of the milk supplied by the Stock Farm to the Public Institutions maintains its high standard.

45 Cattle Dips were analysed for owners of Dipping Tanks and the necessary quantities of ingredients for re-charge were recommended.

The number of Rum samples submitted for analysis shows a decrease, only 102 samples being sent in. These consisted largely of high ether and flavoured rums which were being sold on a basis of "Ether" content.

Sugar samples numbered 86, and these consisted of raw sugar of about 96 degrees of polarisation.

The local manufacture of "Beer" appears to be on the increase judging from the number of samples submitted. Certain cheap brands of locally made "beer" are manufactured from an imported preparation of concentrated malt extract and hops which is diluted with water, and fermented after the addition of sugar or molasses. As may be expected the alcoholic and other properties of the beverages varies considerably, and in some cases a considerable amount of sediment is formed.

The quarterly analyses of the drinking waters of Kingston and St. Andrew were made, and the good quality of these supplies is maintained.

8 samples of water from rivers and springs were examined for salinity in connection with irrigation works. In addition 3 samples of water for use as boiler feed were analysed and directions for the softening of these waters were given.

11 steam coals were analysed, being an increase of 3 samples over last year. Most of these were submitted by one company in Kingston.

Out of the 4 lots of animal viscera which were examined for poison positive results were obtained in three cases as follows:—

- (1) 0.05 grains of yellow Phosphorus in the viscera of a donkey.
- (2) 0.017 grains of yellow Phosphorus in the viscera of a cat.
- (3) Large traces of Arsenic in the organs of a cow.

Amongst the substances examined for poison were some cakes which were supposed to have been flavoured with "Almond flavouring," also corn-meal porridge and other foodstuffs which had also been flavoured with similar "Almond flavouring." Analysis showed that the "Almond flavouring" was derived from Nitrobenzene, which is commonly known as "Oil of Mirbane." A sample of "Almond Flavouring" was purchased from a druggist, and this was also found to consist of Nitrobenzene.

Amongst the drugs which were analysed, and which totalled 3, was a well known brand of Infant's Teething Powder, which on examination proved to consist of a mixture of Potassium Nitrate and Lactose. The cost of a box of 20 powders was 1/3d, whilst the actual value of the powders, as worked out on the cost of the ingredients, was 8/100ths of a penny.

A sample of crude castor oil, which had produced vomiting and acute diarrhoea in a person who took a dose, was found to have a high degree of acidity and also to contain fragments of castor oil seed meal, the latter contains the poisonous ricin.

A sample which was purchased as Cooper's Dip for use in spraying cattle was found to be ineffective and analysis revealed the fact that crude castor oil had been served instead.

Experiments were carried out on the elutriation of sand for the City Engineer in connection with certain suggestions for the disposal of sewage. Some useful data were obtained co-relating the upward flow of water in pipes with the rate of settling of the sand in pipes of different diameters with varying degrees of upward velocity.

Analysis of an Anti-knock mixture for use in internal combustion engines showed that it consisted of a mixture of benzene with lead-tetra-ethyl.

Other samples of a general nature included fresh milks, minerals, oils, foods, medicines, soaps and copra.

The manufacture and sale of Paranaph for the use of Dipping Tanks was continued throughout the year. The sale of Arsenite of Soda, and other Insecticides were also carried out.

Further experiments were made in connection with the colouring of Arsenite of Soda with dyestuffs. The Department now supplies Arsenite of Soda, admixed with a powerful blue dye, in original drums of 25lbs., 50lbs. and 100lbs., in place of broken quantities, at cost price to owners of registered dipping tanks only. This procedure eliminates any risk of theft of this poisonous substance en route to the purchaser.

The following table shows the amount of material issued to the public, and its nature, for the past three years.

	1924.	1925.	1926.
Paranaph	27,128	26,541	29,778 lbs.
Arsenite of Soda	15,786	15,653	19,146 lbs.
Copper Sulphate	307	154	265 lbs.
Carbon Bisulphide	480	658	462 lbs.
Rat poison, bulk	105	234	263 lbs.
Rat poison, 1 oz. packs	160	189	200
Standard Iodine Solution	36,200	31,250	35,250 c.cs.
Thymol powders	242	337	227 ozs.

In addition 212 refills of Starch solution and 41 of Bicarbonate of Soda were issued.

The above table shows an increase in the amount of Paranaph and Arsenite of Soda supplied.

The following table gives the figures for the receipts for Laboratory fees and Sales for the past three years.

It must be pointed out that as it is the policy of the Government to sell goods at cost price to the public, in May 1926 the cost of Arsenite of Soda was reduced from 5 pence to 3½d per lb., and therefore the receipts for Laboratory Sales are not strictly comparable with the figures shown in the first table, as the large amount of Arsenite of Soda sold during 1926 was sold at a cheaper rate than that prevailing for last year.

	1924.	1925.	1926.
	£ s. d.	£ s. d.	£ s. d.
Laboratory Fees	159 1 0	174 3 6	160 11 6
Laboratory Sales	1,038 15 2	1,030 1 6	1,038 0 0

During the year one Apprentice left the Laboratory to take up a position as his time of service had expired.

The staff now employed in the Laboratory is the smallest it has been for many years, whilst the amount of work carried out has increased enormously, and is still growing as shown by the number of samples analysed, the number 2,056 constituting a record. There is ample scope both for an increase in the size of the Laboratory, and also the Technical Staff.

W. LEIGH BARNETT, M.A., B.Sc., F.I.C.
Deputy Island Chemist.

IX.—STAFF.

Changes.

Mr. E. N. Sheridan, Temporary Clerk in the Head Office, was promoted to an assistantship and transferred to the Government Savings Bank.

Mr. C. G. Hansford, Microbiologist, was transferred to Uganda and left Jamaica in May, 1926.

Miss E. Marson, Typist and Stenographer in the office of the Superintendent of Public Gardens, was promoted to an Assistantship in the same office.

During the year the following severed their connection with the Department:—Messrs. F. P. Alexander and G. N. Roche, Inspectors of Plant Diseases; L. E. G. Gayle and B. E. Lewis, Laboratory Apprentices; H. H. Foreman, Temporary Clerk.

The following were added to the Staff:—Mr. J. McIntosh and Miss R. E. White, Temporary Clerks; Messrs. H. C. Bowen and F. F. Graham, Inspectors of Plant Diseases.

I have the honour to be,

Sir,

Your obedient Servant,

H. H. COUSINS,

Director of Agriculture.

